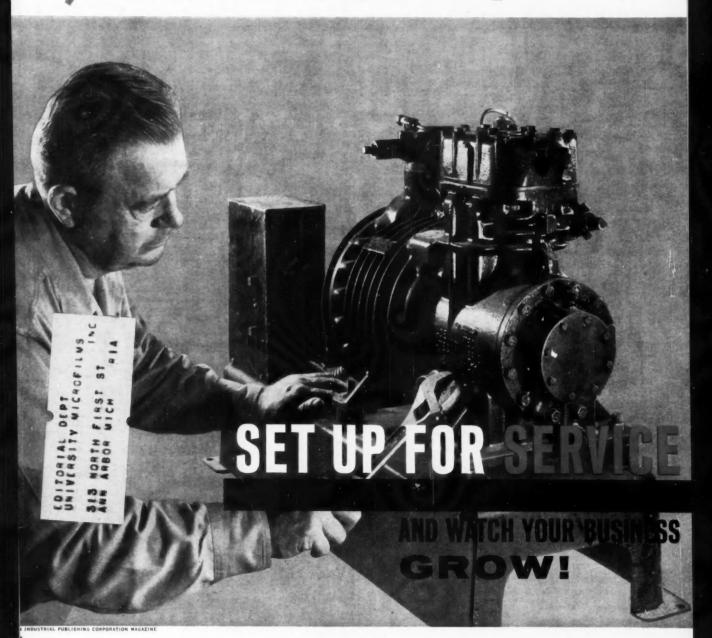
The REFRIGERATION & AIRCONDITIONING SEPTEMBER 1960



Service uniforms do make a difference Take a good look at your service dispatching system

Desert air helps cool rail welding controls



Our Copper Tube is a VIP

Delivering Viking Copper Tube in a Rolls Royce is not unusual at all when you consider the facts. The attention, care and protection we give it throughout its fabrication makes it a V. I. P. (Very Important Product) in our opinion. If it receives the best in protection . . . why not in its distribution to our customers?

VIKING

copper tube co.

CLEVELAND 10, OHIO



The 1937 Phantom III, 12-cylinder Rolls Royce is a Classic. Formerly belonging to the Lord Mayor of Kingston-on-Hull, it is now in our service. Viking personnel, however, drive American made cars.

Circle No. 69 on Reader Service Card

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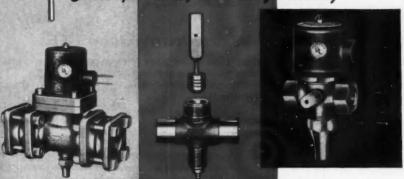
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ALCO SOLENOID VALVES FOR POSITIVE CONTROL ALCO'S HIGH QUALITY

Guarantees Maximum Life

- Constructed both for hermatic and non-hermatic applications
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- Alco's Cool, POWER-PACKED coils, moisture proof impregnated
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Comes apart easily in the line for cleaning



More than 125 models for every control application:

LIQUID . SUCTION HOT GAS . WATER

STEAM . AIR

Call your ALCO WHOLESALER, WRITE for Specifications Bulletin No. 173-55

BUY SECURITY
BUY QUALITY
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ALCO VALVE CO.

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The one complete line of refrigerant controls: Thermostatic Expansion Valves * Refrigerant Distributors

Solenoid Valves * Suction Line Regulators * Flooded Evaporator Controls and Reversing Valves

8222

Your Prize Package!



UCON Brand Refrigerants come in just three popular sizes... and only one type of easy-to-use cylinder per sizea boon to all who like things convenient, effective and uncomplicated!

GREAT FOR SERVICEMEN! Specify Ucon Refrigerants in the 10-lb. and 25-lb. Ring-Top cylinder - the original, handy cylinder that uses its head to make your job easier. Carries easier, stores easier, stands inverted by itself while you use it. Ring-Top cylinders have the new convenient handwheel valve that saves time on the job. too. And all Ucon Refrigerants-in 10-lb., 25-lb., or 145lb. cylinders-are readily available from your wholesaler when you need them . . . as much as you need. No problem of inadequate inventories of the size you need for the job!

GREAT FOR WHOLESALERS! With UCON Brand Refrigerants, inventory problems are minimized, valuable floor space saved. No need to carry more than the three popular cylinder sizes to satisfy customer request. Recordkeeping for cylinder returns is easy, too. For all the refrigerants you need with all the back-up you want, carry Ucon Brand Refrigerants!

Ucon Refrigerants—the COMPACT and CONVENIENT Line—for • top quality product • easy-to-use cylinders • friendly personalized service

UCON Brand Refrigerants are manufactured by UNION CARBIDE CHEMICALS COMPANY— Division of Union Carbide Corporation 270 Park Avenue, New York 17, N. Y.

> Exclusive Sales Agent to Air Conditioning and Refrigeration Wholesalers ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

UCON and UNION CARBIDE are registered trade marks of Union Carbide Corporation



exclusive sales agent

reader's guide to



for September 1960

COVER FEATURE: Service is an important factor in the contractor's business. This issue covers five aspects of the service problem, from dispatching service trucks to selecting proper uniforms for servicemen. Consulting editor George C. Webster leads off the discussion on page 38.

JOHN S. ROBINSON general manager

JIM McCallum editor

Ron Henry associate editor

GORDON ANDERSON assistant editor

SCHOLER BANGS western editor

George C. Webster consulting editor

ALARIC MAUSSER
art director



and copyright 1960

FEATURES

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A single consolidated trade association could help our industry grow

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Should men be started from home or shop? Here's a pro-and-con analysis

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This contractor hires no salesmen. His servicemen bring in all leads.

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You can increase your business by adapting discarded equipment to new uses

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Nevada contractor solves tricky problem with air-cooled liquid chiller

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Here's a handy checklist for grading your service department

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Automatic refrigerated purging of air from condensers offers many advantages

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These instruments give management an instant check on truck speed and mileage

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Proper clothing for servicemen provides many plus values

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Increased production is biggest factor in making this decision

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.... in ARI figures reported for the first quarter of 1960

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HENRY LEFER

MARY MARRACINO editorial assistant

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OX-PHOS

FOR SAFE AND EASY SCALE REMOVAL

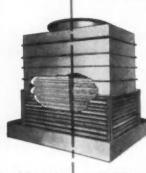
- REMOVE—both scale and corresion products from condensers, lines and accessory equipment.
- 2. AVOID-high head pressures.
- 3 AVOID—air conditioning equipment breakdown at the hottest times of year.
- AVOID—costly shutdowns while cleaning system Ox-Phos can be used while system is operating.
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After you have cleaned your cooling tower equipment with OX-PHOS, keep it clean with MEMPO products.

Both of these are part of the DEADY COMPLETE WATER TREATING PROGRAM for Cooling Water treatment which insures maximum efficiency of your cooling system.

OX-PHOS is available in liquid, powder or brick form.

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hattancoga, Cincinnati, Davenport, Denver, City, Los Angeles, Memphis, Milwaukee, is, San Francisco, Seattle, Toledo, Tulsa.

Circle No. 23 on Reader Service Card

Calendar of Industry Events

October 10-12, 1960

American Gas Association (Annual Convention) Atlantic City, N.J.

October 20-23, 1960

Refrigeration Service Engineers Society (Annual Convention)
Multnomah Hotel
Portland, Ore.

October 23-26, 1960

National Frozen Food Distributors Association (Annual Meeting) Statler Hotel New York City

October 28-November 2, 1960

Air Conditioning & Pefrigeration Wholesalers (Annual Convention) Aboard S. S. Hanseatic Sailing from Port Everglades, Fla.

October 31-November 4

The Institute of Boiler & Radiator Manufacturers (Semi-Annual Meeting) Seaview Country Club Absecon, N.J.

November 7-11, 1960

National Hotel Exposition The Coliseum New York City

November 14-16, 1960

National Warm Air Heating and Air-Conditioning Association (Annual Convention) Statler-Hilton Hotel Cleveland, Ohio

November 14-18, 1960

National Electrical Manufacturers Association (Annual Meeting) Traymore Hotel Atlantic City, N. J.

November 18-22, 1960

Air-Conditioning & Refrigeration Institute (Annual Meeting) Hollywood Beach Hotel Hollywood Beach, Fla.

November 20-23, 1960

Refrigeration and Air Conditioning Contractors (Annual Convention) Fontainebleau Hotel Miami, Fla.

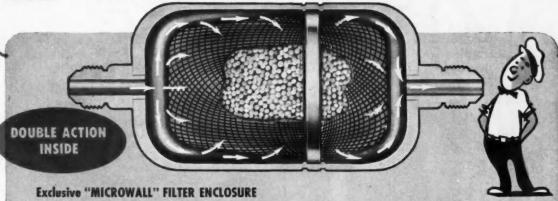
Feb. 13-16, 1961

15th International Heating & Air-Conditioning Exposition International Amphitheatre Chicago, Ill.

Prov

FILTER-DRIERS

ven the Finest-INSIDE and OUTSIDE!



fitters out contaminants --keeps desiccant clean



The "Microwall" Filter Enclosure forms a wall of protection around the desiccant on all sides—keeps contaminants out of desiccant chamber and out of system. The "Microwall" Filter is specially molded, reinforced with screens and provides low-micron filtration at both inlet and outlet.

HIGH-CAPACITY

Permasorb

for maximum moisture and acid removal

Permasorb—the original, time-tested blend of Molecular Sieves and Activated Alumina—provides 100% drying effectiveness because it uses no binders—is made in hard bead form for maximum drying surface area—and is protected by the "Microwall" filter against contaminants.

POLISHED ALL-BRASS OUTSIDE The "M" Filter-Drier is quality-built and looks it! Made of corrosion-resistant brass thruout. Newly proportioned seamless shell is spun in one piece, then highly polished and lacquered to a "jewel" finish. Has brass connections and brass seal caps. Also, new positive-identification labels.



The distinctive bright red and white box tells you at a glance it's the new "M" Filter-Drier—with part number and connections clearly marked—and detailed ratings and recommendations printed on the outside of every box.





Write us for BULLETIN D-5

M onians of your wholesaler THE

THE McINTIRE COMPANY

Livingston, New Jersey

Since 1925 - specialists in Drying, Filtering, Straining

leader Service Card

Circle No. 44 on Reader Service Card

IMPORTANT



ANNOUNCEMENT

to people who hear voices*



*voices that intrude or disrupt and noises that project when they should be hushed

The new Aircoustat® Model W Return Air-Vent Silencers stop the transmission of noise without blocking air flow

Aircoustat Return Air-Vent Silencers eliminate the distracting sound of voices that spill from one area to another. Their slim design gives you a choice of installation. You can install them within a wall or ceiling or hang them on doors or walls. Let Koppers long experience in sound control help you. Write today for information to: Koppers Company, Inc., 3109 Scott Street, Baltimore 3, Maryland.



Model W Return Air-

In sizes for all applications:

Model	Thickness	Width	Length
W-1	31/2"	30"	48"
W-2	31/2"	42"	48"
W-3	5"	30"	48"
W-4	5"	42"	48"
W-5	7"	30"	48"
W-6	7"	42"	48"



SOUND CONTROL METAL PRODUCTS DIVISION

® Engineered Products Sold with Service

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SEPTEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

INCREASE YOUR SALES!

Authorized Redmond Distributorships Available in Selected Markets!



air conditioning replacement motor



for applications through 325 cfm



condenser fan motor



"all in one" replacement kit

Redmond offers you both a complete line of fhp electric motors. blowers, kits, and accessories, and the name that is known nationally as "The BIG Name in Small Motors."

As a Redmond Distributor you profit because of the products available to you, and you increase your sales because Redmond gives you without charge the most complete line of sales and merchandising aids available, backed up with a complete advertising program. It will pay you to take a minute to find out if the Redmond Distributorship in your area is still available. Just fill in the coupon below.

SALESMAKERS

















Redmond DISTRIBUTORS DIVISION ond Company, Inc., Owosso, Michigan

I'm interested in obtaining a Redmand Distributorship.

Is one in my area still available?

ADDRESS

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/SEPTEMBER 1960

ABOUT People

William J. McKeough has been appointed sales representa-



tive for commercial refrigeration and airconditioning products by the Danville Div., Bohn Aluminum & Brass Corp. He will sell the company's products

pany's products in Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine and upper New York State.

Promotion of **Donald F. Spirduso** to assistant advertising manager has been announced by Trane Co.

Appointment of T. F. Vigmostad as New York district sales



manager has been announced by Wolverine Tube, Div. of Calumet & Hecla, Inc. With Wolverine's sales division since 1950, Vigmostad was

formerly sales manager of the St. Louis district. He will now be responsible for activities in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, northern New Jersey and New York.

Robert Fowler has been appointed district representative in North and South Carolina and southern Virginia for Milwaukee Electric Tool Corp.

Donald L. Weyeneth has been appointed sales engineer, refrigeration controls for appliance control department, General Electric, Morrison, Ill. Weyeneth formerly was with the firm's jet engine department in Evandale, Ohio.

Jack Hunter has assumed duties as sales engineer for Dunham-Bush, Inc. He will handle sales in East Los Angeles, of airconditioning, refrigeration, heating and heat transfer products manufactured by the company.

William E. Judd has been elected a vice president of Stew-



art-Warner Corp. Judd, with Stewart-Warner since 1942, was formerly general manager of the company's heating and airconditioning divi-

sion for four years following his job as presidential assistant.

Harry P. Young has been appointed manager, sales planning, residential products for Airtemp Div., Chrysler Corp. He has been with Chrysler since 1947.

Two sales representatives have been appointed by Wolverine Tube, Div. of Calumet & Hecla, Inc. Charles W. Barker will take over the Los Angeles, Calif., area. He covered the same terri-





Tucker

tory for 12 years for Crane Co. Richard H. Tucker will concentrate on Massachusetts, Maine, New Hampshire, Vermont, and Connecticut.

Douglas L. Peterson has been appointed technical sales representative in the north central region for Union Carbide Plastics Co. He will headquarter at the company's office in Detroit, Mich.



A \$100 CHECK is presented to J. S. Cavanaugh (r.), by P. A. McLeod (l.), field sales manager for Worthington Corp., airconditioning and refrigeration division. Cavanaugh, Philadelphia central east zone manager won this reward in a division contest.

John W. Hall has been appointed sales engineer of the solenoid section of Marsh Instrument Co., Div. of Colorado Oil & Gas Corp.

Allied Chemical's General Chemical Div. has announced



the appointment of Frank J. Woods as director of sales. With the Division 22 years, Woods has been heavy chemical sales manager for the past ten. Prior

to that he was insecticide sales manager for seven years.

The naming of Jack A. Swain as Los Angeles, Calif., district manager has been announced by Tecumseh Products Co. In his new capacity, Swain, who has

Prystal Tips

MODEL B-500-B ICE MAKER

ice maker for the quantity ice user

It's always easier to satisfy the ice requirements of large volume ice users by installing Crystal Tips B-500 2-in-1 ice makers. These models (air or water cooled) are real producers! They make, deliver and store up to 525 pounds of ice a day (that's more than 9000 ice cubes or 36,000 ice chips). No other ice maker of similar size or price can match this record ice production!

Besides being a producer the B-500's feature Crystal Tips exclusive 2-in-1 ice service; big (320 lbs.) stainless steel lined storage bins; dependable, trouble-free operation and fast, simple installation.



First name in automatic ice makers.

AMERICAN AUTOMATIC

1679 Park Ave., Faribault, Minn. EDison 4-5501





We want more top notch distributors who want to sell top notch ice makers. Clip and mail coupon today for details about Crystal Tips Distributor Profit-Making Opportunities.

Send me details a	bout Crystal	Tips distr	butor progra	ım.
Name				
Address				
City		Stat	е	

A Division of McQuay, Inc

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*TRADE IN YOUR OLD VOLTAGE TESTER!

voltage and amperage

A voltage "indication" doesn't give you all the information you need to do a job right. You want a precise voltage reading, measured on a calibrated scale... and you get it with the AMPROBE JR. But sometimes voltage is only half the story. Most jobs require an accurate current reading too. The pocket-size AMPROBE JR. provides it—in a snap—without interrupting service! Why settle for anything less?

SPECIAL OFFER

Trade up to an AMPROBE JR. now. For a limited time only, we'll give you a sturdy leather case plus the AMPROBE ENERGIZER (to multiply the JR.'s sensitivity ten times)—an \$8 value—for only \$1 and your obsolete voltage tester! The leads come with the JR. Snap up this offer today—at your distributor.

Amprobe Jr. snap around volt-amp tester \$1985

PYRAMID INSTRUMENT CORPORATION, LYNBROOK, NEW YORK

Serving the Electrical Testing Needs of Industry

Circle No. 11 on Reader Service Card

been with Tecumseh for 13 years and was formerly with the main office at Tecumseh, Mich., will be in charge of wholesaler and manufacturer sales in the states of California, Nevada, and Ari-

Three officials of Minneapolis-Honeywell Regulator Co. have



Nelson

been appointed to new positions involving management of the firm's plants at Minneap olis, Minn., Los Angeles, Calif., Chicago, Ill., and Wabash, Ind. Stanley J.

Nelson, former operations manager of the company's Minneapolis division, is the new manager of residential operations at Minneapolis. He will head most of the temperature control plants there plus those at Los Angeles. R. S. Fries, who had been man-



Fries

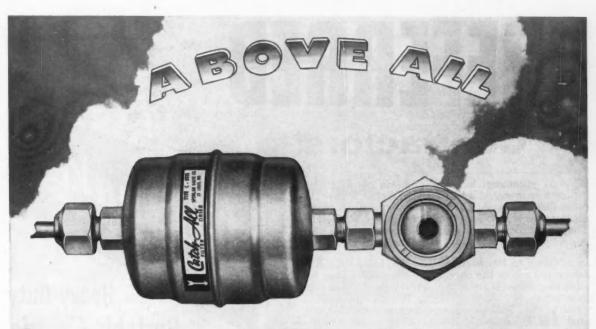


Allen

ager of the Los Angeles division, has moved to Minneapolis as manager of commercial operations, a job which will also include management of plants at Minneapolis, Chicago, and Wabash, Ind. Both of the new jobs of Nelson and Fries are newlycreated positions. Ralph L. Allen succeeds Fries at Los Angeles. He had been manager of the company's branch sales offices.

Walter W. Taveniere has been appointed sales engineer for the New York City area by Acme Industries, Inc.

Joseph A. Wiendl has been appointed general manager of sales for Ingersoll-Rand Co. Wiendl joined the company in



SPORLAN

PERFORMANCE PARTNERS...

with all these "first" features

- The desiccant is formed into a molded porous core.
- It cannot powder.
- It cannot pack.
- The refrigerant cannot channel around the desiccant.
- It provides full line flow protection in every size.
- Filtering instead of straining.
- Corrosive acids are adsorbed and retained within the core itself.
- Maximum drying thru highest degree of activation.
- Moisture and tamper proof sealed fittings.

- One indicator for Refrigerants 12-22-40 & 500. Green always means dry. Chartreuse is the caution signal, and when the indicator turns to Yellow, the system is too wet!
- Color changes are easily distinguished and reversible.
- An indicator protected from dirt by a filter pad.
- Color change point that is reliable and accurately calibrated to temperature.
- Can be installed anywhere in the liquid line.
- A full-view sight glass large viewing area.
- Double gasket each a molded wedge providing a positive leakproof joint.
- Connections flare, swivel nut or sweat.
- Disassembly not required during installation of sweat connection types.

Write for Bulletin 70-10 on the Sporlan See . All and Bulletin 40-10 on Sporlan Catch-Alls!

> See your friendly Sporlan Wholesaler and ask him about these two Peak Performance Partners!

By-pass kits available for economical installations on large liquid lines!

SPORLAN VALVE COMPANY

7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI

EXPORT DEPT. 85 BROAD STREET NEW YORK 4, N. Y.

Circle No. 59 on Reader Service Card

PREFERRE

by Contractors

Why do plumbing, heating and air conditioning contractors prefer MILWAUKEE Electric Tools? Because they're heavy-duty designed-specially built for contractors. No job is too tough for a MILWAUKEE. They're rugged... pack plenty of power and speed, are perfectly balanced for easy handling in any position.

In addition to top performance, MILWAUKEE is recognized across the country as the quality line. No other electric tools are more carefully designed or constructed than MILWAUKEE. What's this quality worth to you? Indirectly it means more profits because quality MILWAUKEE tools stand up under continuous hard use . . . you get long, dependable service and superior workmanship . . . yet, MILWAUKEE tools cost you no more.

Your MILWAUKEE Electric Tool Distributor will gladly arrange a demonstration for you. See him today, or write for literature and prices.





ELECTRIC SHEAR

16 ga. capacity, heavier on trim cuts, and up to 17 ga. stainless. Full 1/4 HP, 4000 strokes per minute. Cuts tight curves to 1/2" radius. eves smooth, clean edges.

PITTSBURGH LOCK-HAMMER

Handles 30 to 22 ga. sheet metal. Lightweight, powerful, closes seams at rate of 20 feet per minute. Perfectly balanced, guides easily along seams. Ball and roller bearings.

RIGHT ANGLE DRILLS

1/4" to 1/2" chuck capacities in 7 basic models.
Speed ranges 215 to 3000 RPM. 1/3 HP motor. Head and handle swivel 360°, lock in any position. Per-fect for tight-spot drilling.

SAWZALL

Electric Hacksaw with full 3/4" stroke. Cuts wood, metal, plaster, pipe. 1/3 HP MILWAUKEE-built motor, 2250 strokes per minute. Lightweight, easy to handle.

ELECTRIC HAMMER

Compact, lightweight, 3/4" rated capacity. 3000 blows per minute. Cushioned recoil action. Ideal for chip-ping, scaling, anchoring, drilling, etc.

Write for Free literature

Look under-Tools-Electric



Also available: Circular Saws (61/2", 71/4", 81/4" dia. 13/4 HP at the blade). Electric Drills from 1/4" to 11/4" capacity, Screw Drivers and Nut Runners.

MILWAUKEE ELECTRIC TOOL CORP. 5310 W. STATE STREET

MILWAUKEE 8, WISCONSIN

Circle No. 46 on Reader Service Card

1941, and has served as assistant general manager of sales since 1959.

Two new sales engineers have joined Trane Co. Robert R. Trochuck is in the Chicago, Ill., office, and Gene J. Lemanski is with the Aurora, Ill., office.

T. C. McKee has been appointed manager of sales service for Detroit Controls Div., American-Standard. He has been manager of the division's West Coast region since 1951.

Chief coordinator of refrigeration wholesaler activities is the



new title and position given Henry Michalski by Controls Co. of America. Michalski will plan and direct the firm's wholesalers' products, sales promotions

and field sales, and generally develop division policy.

Orval Belveal has been appointed district sales manager, ice and refrigeration, for the southwest region by the York Div., Borg-Warner Corp. He will make his headquarters in Dallas, Tex.

The Metals and Controls Div., Texas Instruments, Inc., has announced two management appointments recently. C. J. Grube is the Division's new manager of field sales and R. A. Schultheiss has been named merchandising manager. Grube has been asso-





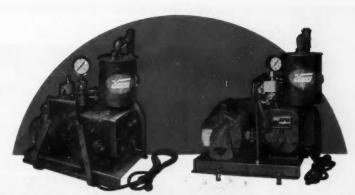
ube Schulthe

ciated with the company since 1944, most recently as eastern regional manager of the firm's general plate products group. Schultheiss, former manager of field sales since 1956, will head the advertising, sales promotion, and graphic arts departments.

George McCrory has been named a sales representative of the warm air and cooling division, Burnham Corp. His territory includes southern Indiana and Ohio, and the state of Kentucky.

Ralph Achelpohl has been appointed sales planning manager for commercial products in the packaged heating and cooling department of Chrysler Corp.'s Airtemp Div.

YOUR WHOLESALER
CAN SERVE YOU - LET HIM!



Speed Service and Get a Cleaner, Drier System!



PORTABLE HIGH VACUUM PUMPS-

A better job-faster... that means completely satisfied customers and more service per man per day. It also means that with modern equipment your service operations turn in the profits you're now losing.

These KINNEY Portable units enable you to LEAK TEST... EVACUATE... DEHYDRATE Freon Refrigerating and Air Conditioning Systems in the shop or on location. The KC-3R, displacing 3 cfm at 1135 rpm, is especially suited to systems of 10 tons or less. The KC-8R, with free air displacement of 8 cfm at 1000 rpm, is the Pump for systems exceeding 10 tons. Each of these KINNEY Pumps includes: Bourdon type Vacuum Gage, automatic Vacuum breaker in case of power failure, male fitting for connecting to copper tube suction line, 10 ft. plug-in cord and snap switch and carrier handle.

KINNEY VACUUM DIVISION THE NEW YORK AIR BRAKE COMPANY

3618J WASHINGTON STREET . BOSTON 30 . MASS.



Please send me Bulletin 4570.1 describing KINNEY Portable High Vacuum Refrigeration Service Pumps.

Write for Bulletin No. 4570.1 and price information today!

Name

Company

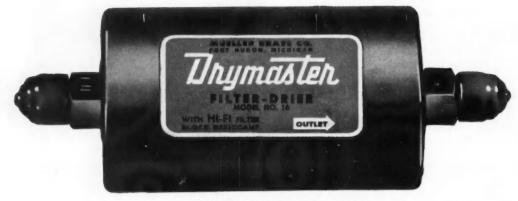
Address

City

Zone State

Circle No. 34 on Reader Service Card

MUELLER BRASS CO. Streamline:
REFRIGERATION PRODUCTS ... THE KEY
TO A CONSTANTLY CLEAN, DEPENDABLY
DRY AND THOROUGHLY EFFICIENT SYSTEM



DRYMASTER BALANCED FILTER-DRIER

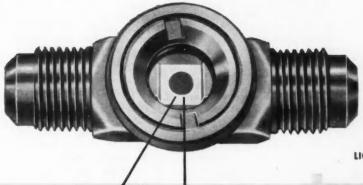
Gives superb filtering and drying, protects against acid, moisture and sludge through use of "Hi-Fi" filter block desiccant, superfine monel screen filter tube and inlet distributor disc. Drymasters are available in 59 different sizes and styles with capacities from 2 tons through 165 tons... male and female flare or solder-type end connections.





MUELLER BRASS CO.

VAMPCO ALUMINUM PRODUCTS, LTD., STRATHROY, ONTARIO



Vuemaster*
LIQUID-MOISTURE INDICATOR





Round blue spot shows the system is full and dry.

Round pink spot shows that moisture is present.

Color spat indicator loses its shape when refrigerant level drops.

This dual-purpose indicator gives the same dependable, leak-proof performance that has made the Streamline single port liquid indicators famous for years but has the added advantage of being a combination moisture and liquid indicator all in one compact unit. A color spot indicator in the new Vuemaster makes possible an instant check of the refrigerant. When the color spot is round and blue, the system is sufficiently charged and the refrigerant is in a normal, dry condition. The spot changes to pink when excessive moisture is present and loses shape when refrigerant supply is low.

Combining engineering skill, experience and quality-controlled production, the Mueller Brass Co. manufactures a line of refrigeration and air-conditioning products that surpasses the most rigid code requirements. Their absolute dependability makes them first choice in any refrigeration or air-conditioning system. Always buy and install Mueller Brass Co. products . . . manufactured in the most complete range of styles and sizes in the industry. Get them at your wholesaler's today.



PORT HURON 14, MICHIGAN

Exclusive Canadian Representative for Mueller Brass Co. Air Conditioning and Refrigeration Products





Feels Article on Warranty Well States Industry Problem

I recently had the opportunity of reading an article in your mazazine entitled "Say Goodby to the 5-Year Warranty" and I have never seen the problem now facing our industry so well stated.

In my position, I am called upon

frequently for different types of speeches and would very much appreciate your sending me your March 1960 issue in which this article appeared. Also, I would like to subscribe to your magazine if you will be so kind as to send me the particulars.

I would certainly appreciate your prompt attention to this matter as I feel that I can very well incorporate this article or excerpts therefrom in my dealer meetings.

WILLIAM T. YOUNGBLOOD Mid-Tex, Inc. Waco, Texas Asks For Hermetic Handbook EDITOR:

If any of your organization, or anyone, knows where one can purchase a hermetic repair handbook for general use, please let me know.

Specifically, I mean overhaul and rebuilding instructions for all hermetic compressors.

DAVID R. MCGUIRE Portland, Oregon

To the best of our knowledge, no such book is available.

Our best suggestion would be that you write the manufacturers of the various brands of compressors in which you are interested and ask them for any information they may have along this line.

ETTER COOL

LAKE all the way

K AND BEVERAGE COOLERS



Model SCP-6

Dry Bottle Cooler—Features clean-line design, recessed toe space, two-way blowers and heavy duty compressor. Baked enamel or stainless steel. No installation secssary, 24 models, up to 48 12-oz.-bottle case capacity.

DIRECT DRAWS



Lo Boy Beverage Cooler - Perfect for under counter use-just 341/4" high! E-Z slide lids disappear completely. 18 models to 40 12-oz.-bottle case capacity. Baked enamel or stainless steel.

ICE CUBE MAKERS



Model 3KR

Here's Cold Dome refrigeration right to the faucet tip—a Nor-Lake exclusive! Styled with rounded edges for safety and easy cleaning. Baked enamel or stainless steel. 12 models with up to 4 keg capacity.



Model SCIM-25

Fill trays with one hand, without spilling, in this handsome self-contained unit. 41/2 bushelstorage (630 cubes) with extra bush freezing! Baked enamel or stainlam ste

WRITE FOR FULL INFORMATION AND SPECIFICATIONS:

NOR-LAKE, Inc. Second Ave. and Elm. Hudson, Wisc., Dept. 202

Other.



NEED IT NOW? NOR-LAKE can ship now-all models kept in stock!

Please rush	FREE	illustrated	information	01
Rottle C	colore		Direct Draw	

☐ Ice Cube Makers

NAME	 		

ADDRESS

CITY.

Circle No. 51 on Reader Service Card

Wants Heat Pump Reprints

EDITOR:

We would appreciate knowing if reprints are available on the series of articles you are now running in your magazine entitled "The Heat Pump Primer."

If a set of reprints is available, we would appreciate knowing the

cost.

RICHARD P. HANKINS Hankins and Anderson Richmond, Va.

Unfortunately, no reprints of "The Heat Pump Primer" series are available. These articles have been attracting an exceptional amount of reader interest, however, so we are now considering reprinting the entire series after it is completed in the magazine.

High Ambients Affect Heat Rejection Factors

EDITOR:

I noticed in the "Applications Manual" of the April issue that Mr. Smith makes a statement which can be most tricky. He says the average heat rejection factor for airconditioning is 1.25.

This is true sometimes, but it is not true most of the time with most present day equipment. It is true of belt-driven compressors powered by open motors. It is not true today on systems using hermetic or semi-hermetic compressors. On these types of compressors, all of the electrical energy which

Continued on page 80

YONKERS RACEWAY CHOOSES BOHN





BOHN WATER AND STEAM COILS INSTALLED IN NEW CLUBHOUSE ADDITION

Mechanical Engineers: Guy B. Panero Engineers, New York
Architect: Lionel K. Levy, New York
Structural Engineer: Dr. Jacob Feld, New York
Contractor: Jas. H. Martin, Incorporated, New York



Rugged, dependable Bohn coils were used for two complete air conditioning systems installed in the modern new Clubhouse Addition at Yonkers Raceway, Yonkers, New York.

Three Bohn 6-row chilled-water coils of the double circuit copper-fin type with a total face area of approximately 70 sq. ft. provide a 40,000 C.F.M. system with a cooling capacity of 2,572,000 BTU/HR, while four Bohn 1-row steam distributing coils with a face area of nearly 42 sq. ft. have a heating capacity of 1,296,000 BTU/HR.

In the second system of 46,000 C. F. M., there are six Bohn 6-row chilled-water coils of the full circuit type with a face area of almost 81 sq. ft. and four Bohn 1-row steam distributing coils with a face area of 48 sq. ft. The cooling capacity is 2,330,000 BTU/HR and the heating capacity is 1,490,000 BTU/HR.



BOHN KNOWN-CAPACITY COILS feature . . .

- Die-formed plate-type aluminum or copper fins... from 4 to 14 per inch... with self-spacing collars completely covering the tubes. Permanent, tight, metal-to-metal fin-tube bond.
- · Heavy-gauge casings die-formed from galvanized steel.
- Headers of heavy-wall seamless copper tube with heavy die-formed end caps.
 High pressure tested at 320 psig. minimum air pressure under warm water.
- Tested and rated according to ASHRAE standard 33-58.

For further information and specifications on BOHN Water, Steam, or Direct Expansion Coils, write today to . . .



DIRECT EXPANSION COIL

BOHN

Buy the known line...the BOHN line
ALUMINUM & BRASS CORPORATION

Danville Division * Danville, Illinois



"DRI-COR" the High Flow... High Drying Capacity... Acid Removing... Refrigerant Filter-Drier with Granular Desiccant and Advanced Design Molded Core

The only molded core made by ceramic bonding of highly efficient desiccant particles. All inert fillers are removed by ceramic fire completely activating the core. Permits maximum flow and depth filtration at minimum pressure drop. Dryness assured by Abso-Dry® pressure sealing and Brass Flare Nuts.

CAPACITY R-12 up to 20 TONS RANGE R-22 up to 25 TONS

DRI-COR Advanced Molded Core

Design Provides Uniform Core Porosity No Inactive Cement or Binder

Progressive Filtration . . . 500 P.S.I. Working Pressure

DRI-COR Drying And Filtering
Properly Proportioned . . .
Complete range of sizes

DRI-COR Low Pressure Drop
Transverse Flow for Rapid
Moisture and Acid Adsorption

DRI-COR Pressure Sealed
Permits Continued Desiccant
Reactivation Prior to Use

Also Available in Replaceable Cartridge Types . . . Write for DRI-COR bulletin V-87.

HENRY COMPANY

For Refrigeration, Air Conditioning and Industrial Applications

MELROSE PARK, ILLINOIS, U.S.A. CABLE: HEVALCO, MELROSE PARK, ILL.

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Are You Paying Premium Prices For Your Pipe Wrapping?

Now...cut costs, reduce inventories and profit more with the one standard insulation that fits every pipe and fitting, meets every service requirement!



THREE INSULATING BARRIERS 2002





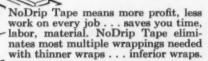
Rough surface prevents free circulation of oisture-filled air - creates dead air barrier.

2. 4-INCH THICKNESS

Built-in moisture barrier assures utmost insulating efficiency.

3. INSIDE

Dead air is trapped between "corrugated strands", forms added insulation barrier.



Why pay more when you can buy the handy 16 foot roll of ¼" thick NoDrip Tape at less than half the cost of a roll of ordinary ½" wrapping . . . and far below the cost of pre-formed foam cellular insulations?

Next time an equipment cold line job

calls for permanent protection against condensation drip, "sweating" or frost, insist on using NoDrip Tape. Stops rust and corrosion, too . . . holds temperatures more constant and increases the efficiency of the cooling equipment. NoDrip Tape is pliable, cork-filled and completely self-adhering. Easy to work with . . . forms an air-tight, 100% vapor and moisture proof jacket. Needs no tools, vapor seals, fasteners, brads or adhesives.

MO DRIP PLASTIC COATING ... PROTECTION FOR BIG AREAS

Easier to Apply...

EVEN AROUND JOINTS, TEES, VALVES OR ANGLES











For large pipes, tanks, air ducts, we recommend NoDrip Plastic Coating for permanent protection from condensation, rust and corrosion. Another fine Mortell refrigeration product, NoDrip can easily be applied by brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces.



Makers of Mortite Caulking Cord and Mortite Caulking Gum



J. W. Mortell Company, Dept. 3 548 Burch St., Kankakee, III.

O.K.I Send me full information about the complete line of Mortell refrigeration products.



I'm a Johber Dealer Servicemen Address.

City

Circle No. 48 on Reader Service Card



*General Chemical announces a new genetron

Soon east coast air-conditioning and refrigeration wholesalers and original equipment manufacturers will be "next door" to a large new source of "Genetron" Super-Dry Refrigerants. General Chemical has started construction of new "Genetron" manufacturing facilities at its Elizabeth, N. J. Works.

This will be the third "Genetron" plant, supplementing those in Baton Rouge, Louisiana, and Danville, Illinois, and increasing our overall production capacity by more than one third. This new "Genetron" plant is another example of General's efforts to serve the growing needs of the air-conditioning and refrigeration industry and will reflect the advanced manufacturing and process control techniques which have grown from General Chemical's leadership in fluorine chemistry.

"Genetron" Super-Dry Refrigerants are stocked by all leading wholesalers coast to coast. Insist on the best...insist on "Genetron" Super-Dry Refrigerants from your wholesaler.



plant in Elizabeth, N. J.



BATON ROUGE, LA.—From this giant fluorochemical center shipments of "Genetron" Super-Dry Refrigerants speed to wholesalers and equipment manufacturers and to our "Genetron" stock points throughout the nation.



DANVILLE, ILL. — General Chemical's Danville plant assures Midwest users of a dependable supply of "Genetron" Super-Dry Refrigerants. This plant also backs up supply to General Chemical's nationwide network of stock points.

genetron®

super-dry refrigerants



GENERAL CHEMICAL DIVISION
40 Rector Street, New York 4, N.Y.

Circle No. 6 on Reader Service Card

PHYSICAL PROPERTIES	ARMAFLEX 22	BRAND	BRAND B	BRAND	BRAND D
LOW DENSITY (less than 7.5 lbs. per cu. ft.)	YES	NO	YES	YES	YES
LOW WATER VAPOR TRANSMISSION (less than .15 Perm)	YES	NO	NO	YES	NO
LOW WATER ABSORPTION (less than 3% by volume—28 days)	YES	NO	NO	YES	YES
DIMENSIONALLY STABLE AT 200° F. (leas than 5% lineal shrinkage—28 days)	YES	YES	YES	NO	NO
DIMENSIONALLY STABLE AT 220° F. (leas than 5% lineal shrinkage—28 days)	YES	NO	NO	NO	NO
NEGLIGIBLE ODOR	YES	NO	NO	(?)	NO
SELF-EXTINGUISHING	YES	YES	YES	(?)	YES
OZONE RESISTANCE	YES	YES	YES	YES	YES
SMOOTH SURFACE	YES	(?)	(?)	(?)	YES

Properties evaluated by tests at Armstrong Research and Development Center
(?) indicates results are inconclusive or classification a matter of individual
judgment

What's better about the new Armstrong Armaflex 22?

This chart tells you at a glance why the improved Armaflex 22 gives superior performance on pipe covering work. New Armaflex 22 features a temperature range from below zero to 220° F.; a super-smooth exterior surface; and greater toughness and durability. For complete information on this fine quality flexible foamed plastic insulation, send for new booklet. Write to Armstrong Cork Company, 2204 Roth Avenue, Lancaster, Pennsylvania.





1860-1960 Beginning our second century of progress



ONLY SQUARE D STARTERS WITH 1-PIECE OVERLOAD RELAYS GIVE Absolute PROTECTION!

• Only Square D makes thermal overload relays with 1-piece construction—and only with 1-piece construction can you know you've installed the heater correctly. Square D 1-piece overload relays can be installed only one way. They are factory-assembled, individually tested and calibrated, completely tamper-proof. Repeated tripping will not affect accuracy.

You pay for overload protection—be sure you get it. Insist on Square D 1-piece overload relays for absolute protection.



Mell coupon today for simple 'jig-saw'' demonstrator -see why only Square D gives absolute

protection





Square D Company Department SA-242 4041 North Richards Street Milwaukee 12, Wisconsin

Please send me information on Square D magnetic starters, along with your simple 3-minute "jig-saw" demonstrator

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COMPANY

ADDRESS

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SQUARE D COMPANY

wherever electricity is distributed and controlled

Circle No. 61 on Reader Service Card



THE McQuay Hot Rod electric defrost unit cooler system is safe, dependable and exceptionally simple and foolproof in its construction and operation. It is but one of several automatic defrost systems offered by McQuay.

Hot Rod unit coolers all have casings of hammered aluminum, and are equipped with built-in heat exchangers. They, of course, feature the famous McQuay coil construction. Aluminum drain pans are heated for positive de-icing, and all electric elements are accessible and easily removable without disturbing the coil or drain pan.

Your McQuay wholesaler can quickly show you the advantages of the Hot Rod electric defrost systems, or write McQuay, Inc., 1643 Broadway Street N.E., Minneapolis 13, Minnesota.

Safe, Dependable ...and

SO VERY

8 SIZES 3,000 TO 32,000 BTU/HR AT 10°7.0.



M. Quay INC.

AIR CONDITIONING . HEATING . REFRIGERATION

Circle No. 45 on Reader Service Card



ALCO

offers the

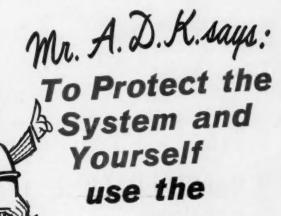
FIRST and ONLY

Silica-Gel P.A. 400 and Molecular Sieve

BLOCK DESICCANT FILTER-DRIER

to the

REFRIGERATION INDUSTRY







Important Advantages and System Benefits:

- 1. Exclusive Alco binder assures a block of 97% pure desiccant.
- Manufactured by Alco's specially developed forming process (not pressure moulded)—eliminating packing effect—assuring greater uniformity of flow.
- 3. Geometry of ADK block exposes maximum surface to adsorb and filter out moisture and fine particles.
- 4. Directed and even distribution of liquid gives filtration in depth—coupled with short flow path means low pressure drop—longer system life.



- 5. Rigidly controlled activation—factory sealed.
- Maximum system protection against acids and other foreign matter.
- 7. Copper (ODS) fittings mean easy brazing.
- 8. Brass (SAE) fittings means no flare nut creep.
- 9. Full flow fittings mean low pressure drop.

ALCO DRI-KLEANER is your insurance for a longer, more trouble-free system life.

• BUY SECURITY
• BUY QUALITY
• BUY ALCO

3328

ALCO VALVE CO

13 KINGSLAND AVE. . ST. LOUIS 30, MO.

The one complete line of refrigerant controls: Thermostatic Expansion Valves Refrigerant Distributors Solenoid Valves Refrigerant Filter-Driers Suction Line Regulators Flooded Evaporator Controls and Reversing Valves

Circle No. 5 on Reader Service Card



as we see it ...

▶ If the housing industry is to realize the unprecedented growth which has been predicted for it during the sixties, the housing industry must first become aware of what the consumer wants in housing. So says Harold Boeschenstein, president of Owens-Corning Fiberglas Corp.

And airconditioning, he points out, is fast becoming one of the plus values that the prospective homeowner insists upon. By 1970, he predicts, full climate control will be a basic element of new houses throughout the country.

Do the builders in *your* area realize these facts? If not, you're missing a bet.

▶ Did you ever doubt that airconditioning is must in modern motels? If you did, just consider the recent decision of Quality Courts United to make airconditioning in every unit a condition of membership in the group.

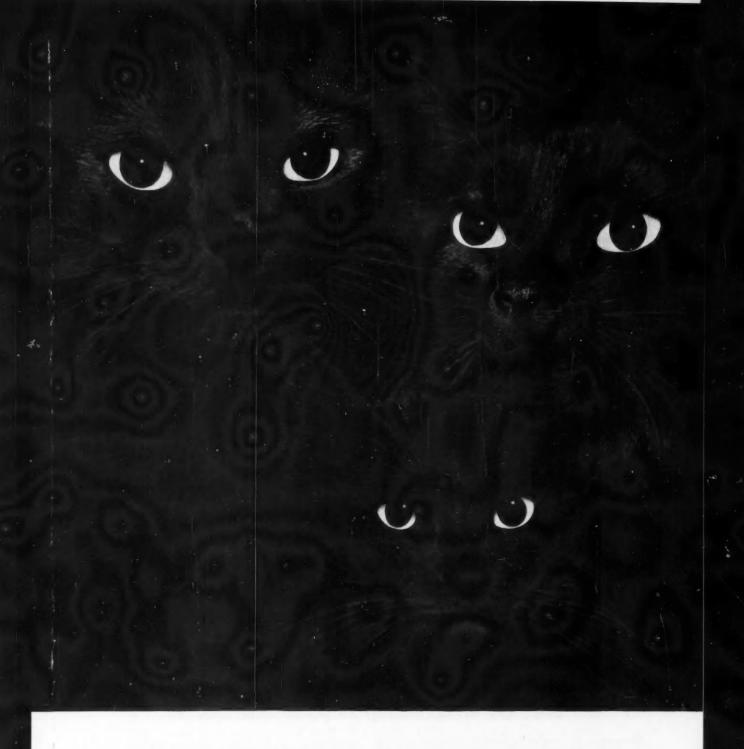
This organization is a nonprofit association of more than 500 members operating motels in all states east of the Mississippi and in eastern Canada. Before the end of October every one of the more than 24,000 units in these member motels will be equipped with refrigerated airconditioning, according to Tommy Tucker, Quality's president.

"In today's intensely competitive motel business," he points out, "airconditioning is almost as essential in a unit as a bed."

► Women inmates of New Orleans' Parish Prison no longer will have to sweat out their terms literally as well as figuratively.

According to a report from Iddo Lampton of Enochs Sales Continued on page 84

MONTPELIER, OHIO



In the dark all cats look gray. But in the white light of day, they all look different . . . white, black, calico, tiger . . . any similarity is gone.

Likewise, someone may tell you all refrigerants are alike. But they aren't . . . look underneath . . . where the differences show.

In the white light of experience, "Freon" refrigerants stand alone. They have been proved in 30 years of use, and their quality has set the standard for the industry. The many services that go with "Freon" refrigerants, such as technical and application data, have helped contractors and service engineers build the industry as it is today.

Dollar for dollar, you can't get more than you get with "Freon". So why take chances? Accept no substitutes for "Freon". And "Freon" refrigerants are so easy to buy . . . available from air conditioning and refrigeration wholesalers everywhere. E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, Wilmington 98, Delaware.

Topped in gold and factory-sealed for purity

FREON®

premium quality

refrigerants



BETTER THINGS FOR BETTER LIVING



Who Discovers the Discoverers?

"A professor can never better distinguish himself in his work than by encouraging a clever pupil, for the true discoverers are among them, as comets amongst the stars." CARL LINNAEUS

Somewhere in this mighty land of ours, a gifted youth is learning to see the light of tomorrow. Somewhere, in a college classroom or laboratory, a dedicated teacher is gently leading genius toward goals of lofty attainment. Somewhere the mind of a future discoverer—in science, engineering, government, or the arts—is being trained to transcend the commonplace.

Our nation has been richly rewarded by the quality of thought nurtured in our colleges and universities. The caliber of learning generated there has been responsible in no small part for our American way of life. To our college teachers, the selfless men and women who inspire our priceless human resources, we owe more than we will ever be able to repay.

Yet how are we actually treating these dedicated people? Today low salaries are not only driving gifted teachers into other fields, but are steadily reducing the number of qualified people who choose college teaching as a career. At the same time, classrooms are beginning to get overcrowded. In the face of this, college applications are expected to double by 1967.

This is a severe threat to our system of education, to our way of life, even to our very existence as a nation. Our colleges need help—and they need it now!

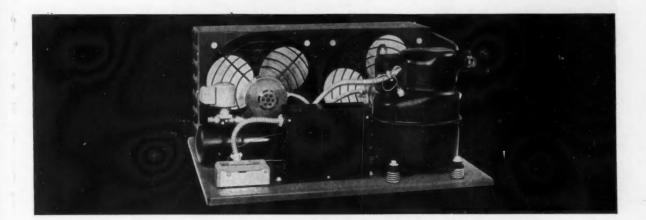


If you want to know more about what the college crisis means to you, and what you can do to help, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

Sponsored as a public service, in cooperation with the Council for Financial Aid to Education



NEW BENDIX-WESTINGHOUSE R-12 CONDENSING UNITS ARE COMPACT, EFFICIENT AND LOWEST-PRICED ON MARKET!



Two new condensing units developed by Bendix-Westinghouse using R-12 refrigerant are now available in 2- and 3-h.p. capacities to installers of commercial refrigeration and air conditioning equipment.

The two new models, the BRYH200T and the BRYH300T, are ruggedly engineered for high back-pressure applications such as water chillers, bulk milk coolers, air conditioning installations and walk-in coolers.

Motor compressors of these new units are of two-pole design, which offers lighter total weight than the standard four-pole design, resulting in a marked reduction of shipping costs and installation space. These heavy-duty motors also feature the latest insulation system for longer motor life.

Standard equipment on the units includes high and low pressure controls and a dualvoltage solenoid (115 or 230 volts) which can be mounted either on the condensing unit or at the fixture.

Full suction gas cooling, positive pressure lubrication and inherent overload protector are other advanced design improvements contained in the motors to assure longer, quieter and more efficient operation.

The new units, in both 2- and 3-h.p. capacities, are available in either 230-volt, 60cycle, 1-phase, or 208/220-volt, 60-cycle, 3-phase models. Call or write direct for free literature describing these sensational, economy-priced Bendix-Westinghouse condensing units. There's no obligation.

Bendin-Westingkouse

Circle No. 17 on Reader Service Card



This great seaborne health center will carry a new kind of aid abroad—with your help. Part of the people-to-people project Hope, it will enlist 200 specialists in sharing our health skills.

Ambassador with a blackboard, the Hope specialist will help the often woefully few local medical technicians train helpers. The result: many more hands. And that means one Hope dollar is multiplied many times over.



YOUR HELP CAN COME BACK A HUNDRED TIMES OVER



One local doctor for 100,000 people. These are the odds Hope may face. Yet Hope can mean so much. The health of this child. The health of five Indonesians. *Trained* hands and only a dollar's worth of penicillin can cure them of crippling yawa.

If enough of us help, the S.S. Hope will be outbound in 1960. First port of call: Indonesia. A bold health project called Hope will be underway.

The need is crucial. Many places, too many health hazards exist. Too many people robbed of the will to live. Too few hands to help. Often, a doctor for 100,000.

Hope's approach is *practical*. Help where a nation's doctors ask help. Help them help themselves to health. By training, upgrade skills—multiply hands. Hope's doctors, dentists, nurses, and technicians will man a center complete to 300-bed mobile unit and portable TV.

You can not only make every dollar do the work of many, you can earn a priceless dividend. With health comes self-respect. People at peace with themselves are less likely to war with others.

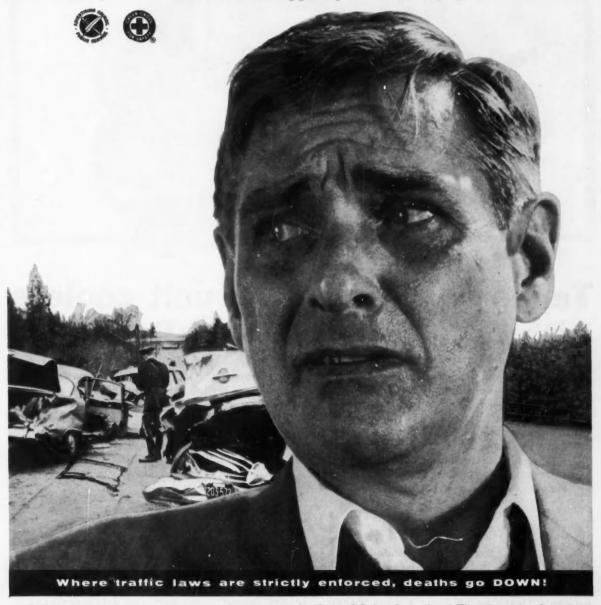
Hope is yours to give. It's a people-to-people project. For one year's worth, 3½ million Americans must give a dollar. Don't wait to be asked. Mail a dollar or more now to HOPE, Box 9808, Washington 15, D.C.



HELP LAUNCH HOPE

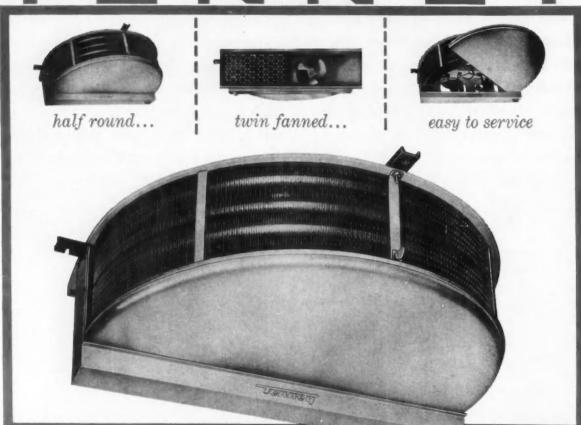
You can do something

about traffic accidents! Drive safely yourself—obey the law. Sure. But you can do a lot *more!* Traffic accidents affect *everybody*. Reducing them is a community problem. Its solution calls for systematic, organized effort and cooperation with public officials—for teamwork and leadership. Here is where *you* can help. Join with others who are working actively to promote safe driving and secure strict enforcement of all traffic laws. Make your influence count. Support your local Safety Council!



Published in an effort to save lives, in cooperation with the National Safety Council and The Advertising Council.

TENNEY



Tenney TW and TWF unit coolers with ALL-ALUMINUM HOUSINGS!

More cooling power per square inch and most convenient installation with Tenney's TW and TWF unit coolers than with any other comparable units—and now they're built of lightweight, rustproof aluminum. True half round design insures maximum air distribution. It hugs up tight against the ceiling and its unique design allows maximum product storage. Service is so simple—flick off a thumb screw and the entire

unit is open, with all parts within easy reach. You never disturb existing refrigeration, electrical or water drain lines! And in case of emergency, one of the unit's two fan-and-motor combinations can maintain safe temperatures until help arrives. Standard filters are optional on both units. Write for literature and technical data on these new all-aluminum TW and TWF unit coolers today.



Write for Bulletin 104-54

Engineers and Manufacturers of Refrigeration and Environmental Equipment ENGINEERING, INC.

1090 SPRINGFIELD ROAD, UNION, NEW JERSEY . PLANTS: UNION, NEW JERSEY AND WILMINGTON, N. C.

Circle No. 65 on Reader Service Card



Organization of an aerospace division has been announced by Tenney Engineering, Inc. Dr. Bruno Sachs, company vice president for engineering and manufacturing, will head the new division. . . Erickson Industries, Inc. has signed a management contract with Laurel Products, Inc. Laurel's administrative offices will be moved to River Falls, Wis., home of Erickson. Production facilities will remain in Laurel, Miss.

June shipments are up 15% over last year at York Div. of Borg-Warner Corp. This is the sixth straight month figures are ahead of the corresponding '59 month. First six months' volume is up 18%. . . . Net sales are up \$10 million for the first six months at Trane Co. and its Canadian subsidiary. This year's sales, ending June 30, were \$48,191,559, compared to \$38,021,685 a year ago. Figures for the three months ending June 30 show this year up more than \$7 million over April, May and June of 1959.

Occupation of a new plant addition has been completed by Temtrol Div., Penn Controls, Inc., at Costa Mesa, Calif. The building, which heads Penn's west coast operations, also will now house the district offices formerly located at Los Angeles, Calif.

A large plant addition is under construction at the Hart & Cooley Mfg. Co., Holland, Mich. When completed, it will contain more than 912,000 cu.ft. of warehouse space. . . . Scheduled for an October completion is a new branch plant for Acme Industries, Inc., in Greenville, Ala. Present plans call for the adding of 100,000 sq.ft., with expansion possible up to 250,000 sq.ft.

White-Rodgers Co. has acquired assets of the burner division of Configured Tube Products Co., Bellwood, Ill. The Illinois company, known for its "Thermi-Jet" single port burners and venturi tubes, will operate as a W-R subsidiary. . . . A separate commercial blower division has been established by Benson Mfg. Co. in Kansas City, Mo. This division will manufacture axial flow blowers.

Warehouses in five cities will speed shipments of products manufactured by Welbilt Air Conditioning and Heating Corp. Present bonded factory warehouses are in Atlanta, Ga. and St. Louis, Mo. Others will be added in Houston, Tex.; Kansas City, Kan., and Phoenix, Ariz. . . . Latest segment of a \$30 million expansion program of Square D Co. has been completed at the firm's Lexington, Ky., plant. Addition of 68,400 sq.ft. makes the plant total now 238,000 sq.ft.

News IN REVIEW ...

A Mexican subsidiary has been formed by Copeland Refrigeration Corp. Located in Mexico City, Copeland Refrigeration de Mexico is headed by Enrique Barrios. The Mexican-manned, self-sustaining company will manufacture and distribute compressors and condensing units. The new firm is the first in a proposed international network of Copeland manufacturing and marketing outlets.

A new organization known as FRAM Aire Corp., Div. of Fram Corp. has been announced by Fram Corp. Headquarters for the new company will adjoin Fram's headquarters in East Providence, R. I.

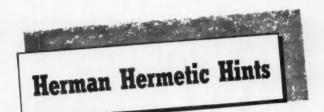
Plans to build a new plant at Elizabeth, N.J., have been announced by General Chemical Div., Allied Chemical Corp. The plant will produce the division's "Genetron" line of flourinated hydrocarbon refrigerants and aerosol propellants. Completion is scheduled for early in 1961.

A 400,000-sq.ft., 12-building complex has been sold by York Div., Borg-Warner Corp., to Hofmann Industries, Inc. Hofmann and York will jointly develop the tract into an in-town industrial park to be occupied by manufacturing, fabricating, and warehousing leaseholders.

Purchase of E. Roy Industries Ltd., Montreal, Canada, has been made by Hupp Corp. The Canadian concern, manufacturers of household refrigerators, furnaces and ranges, will operate as a subsidiary of Hupp. Hupp officials expect to add food freezers and airconditioners to the Roy line.

Airconditioning sales were up 20% for York Div., Borg-Warner Corp., in the first six months of 1960. However, B-W sales for the period were down about \$4 million and net profit was off about \$3 million... A record volume was conducted in residential heat pump and airconditioning sales as reported by Perfection Div., Hupp Corp., for the Jan.-June, 1960 period. The sales increase of 47% included both remote and self-contained airconditioning products.

An all-time 6-month high in earnings has been reported by Commercial Credit Co. The financing agency's consolidated net profits for the '60 Jan.-June period were \$13,848,944.... The first seven months of this year were the best in history and July itself was the 14th straight month of record sales for Butler Brothers Div., City Products Corp. Sales for the seven months were \$111,134,295. July volume alone was \$17,537,218.... Fogel Refrigerator Co. will acquire the existing inventory of Brewer-Titchener Corp. Fogel also will honor warranties on BTC equipment already sold.



on Compressor Replacement

REPLACEMENT CHECKLIST

DO:

FOLLOW THE RULES FOR FAST, EFFICIENT, PROFITABLE SERVICING

MAKE SURE THE COMPRESSOR IS DEFECTIVE Before removing the compressor, follow the suggested test procedure to find the cause of trouble. Reason for return must be shown in detail. The word "defective" is not sufficient to qualify under warranty.

CHECK ELECTRICAL COMPONENTS Overloads, relays, and capacitors can easily be checked and replaced in the field. However, you must know the type of relay and overload, the application, and motor characteristics to order the proper kit. Your Tecumseh wholesaler stocks these handy kits to simplify this selection and provide all necessary parts.

CHECK BACK PRESSURE, VOLTAGE, HORSEPOWER This information is necessary so you may order the proper replacement. The model number alone is not sufficient. The Bill of Material number will describe the compressor completely and is very useful to your wholesaler.

KNOW THE WARRANTY PROVISIONS Be sure you understand the conditions for in and out of warranty compressors, as well as the individual provisions set up by the particular end-product manufacturer involved.

ORDER PROPER REPLACEMENT Each compressor is engineered for the system in which it is installed. Its replacement must be carefully specified to insure maximum operating efficiency.

DON'T:

SUBSTITUTE REFRIGERANT Refrigerants 12 and 22 have entirely different characteristics and cannot be used interchangeably. Always use the refrigerant marked on the compressor housing.

REPLACE HIGH TORQUE WITH LOW Low torque compressors cannot be used on high torque applications. Replace each compressor with its authorized replacement.

CONTAMINATE THE SYSTEM
Special care must be taken to insure that refrigerant lines are not left open to the atmosphere, and filings, etc. have been cleaned out. In case of motor burnout, follow the published procedures to protect the new compressor from being contaminated.

GUESS . . . CONSULT YOUR WHOLESALER Remember . . . your Tecumseh Wholesaler is on your team, he knows the correct procedures and the proper replacement. When any doubt exists, call him in. You'll both appreciate it.

Correct analysis of the problem means investigating every possible cause for failure. The serviceman should constantly be aware of the many variables that effect compressor performance. If in doubt, consult your Tecumseh Wholesaler. Jumping to a hasty conclusion can invite unnecessary replacement, freight costs, expensive call-backs, delay, and poor customer relations.





The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO

TECUMSEH, MICHIGAN

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the companion to Thermobank ...

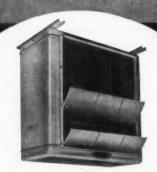
KRAMER SYSTEM

A NEW
AUTOMATIC
HOT GAS
DEFROST
SYSTEM

for applications where

LOW FIRST COST

is the major consideration



One fan evaporator with heat exchanger



Metering accumulator with brackets

If low first cost is the major factor, the new Kramer THAW SYSTEM offers more than any competitive system. (For sharp freezing loads, or where compressor is outdoors, Thermobank is recommended.)

- No compressor overloading with hold-back valve.
- Faster defrosting because more heat is available.
- Positively cuts liquid return to the compressor.
- Has the largest liquid accumulator.
- · Foolproof metering device.
- · No clogging with removable strainer.
- · Oil problems eliminated by gravity drain.
- No unnecessary defrost cycles.
- · Heated copper drain pan.
- · Double pan to protect heating coil
- · Aluminum casing on evaporator.



Removable Strainer



Time



Hot Gas Solenoid Valve



Hold-Back Valve



Hot Gas Strainer



Check Valve

Write for Catalog T-480

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Circle No. 37 on Reader Service Card

LET'S TALK BUSINESS

Needed: a united effort

C ONSOLIDATION HAS BEEN THE PRACTICE in this industry for very practical reasons. Companies have been merged, divisions of companies have been sold, and others have been consolidated. Most recently we have seen the merger of the American Society of Heating, Refrigerating and Air-Conditioning Engineers with the American Society of Refrigerating Engineers. This has been a successful merger. And well it should be, for the research and engineering segments of this industry have similar problems and similar interests. They have placed themselves in an environment in which greater concentration can be placed easily and quickly on the common engineering problems of a single industry.

Our industry produces a long list of products—widely-diversified in application, yet similar in their components, assembly, and packaging. But the hitch comes in their marketing. Here, the public may be bombarded by conflicting claims, "fair trade," promotion gimmicks, and lower pricing.

The key thought here is that the industry has the capacity to produce beyond its ability to sell. And the key man is the installing contractor who, given the sales tools he needs, can carry this industry to the realization of its full potential.

The link between the buying public and the manufacturer is the installing contractor. He represents the cornerstone of the industry's whole marketing structure. Everyone benefits by increased sales. A concentration of all the elements of the industry, dedicated to the same objective of increased sales, could best be handled by bringing all manufacturing and marketing elements together under a single association.

Already we can hear the cries of the dissenters. More group control is their objection. Sure, there are possible disadvantages: domination by a strong minority, "railroading" of measures, a weaker voice by splinter fractions, and loss of specific identity.

But consider the vast, overriding advantages and benefits of a single association which is ethical, representative, and responsible.

Marketing data, industry promotion, service training and product standards are a few of the other areas that could more easily be directed by a united industry. The installing contractor, the wholesaler or distributor, as well as the manufacturer and his suppliers, would all benefit. Group identity could be maintained by establishing divisions or sections under an overall leadership. A board of directors, representative of all segments, could establish policy and direction for the industry. The singleness of purpose of such an association, as well as the economics of such a move, would certainly seem to indicate that consolidation of such mutual interests would assure the capabilities of this industry being realized in the 1960's.

Jack Robinson

SET UP FOR SERVICE

Take a good look at your

SERVICE DISPATCHING

. should you start your men

from home



or shop?



by George C. Webster, consulting editor

Ask any service manager or the owner of any service business what he thinks about the idea of letting servicemen take their trucks home at night, and dispatching them from home in the morning, and you'll probably get a quick and positive answer—one way or the other.

Nobody seems to be neutral on this subject. Management is either for this policy all the way, or dead set against it. And in either case you're apt to find the answer based more on emotion than on reason.

Those against it defend their position with objections like these:

1—The serviceman will use the truck for sundowning. (This means that he will do service work on his own, collecting in cash and pocketing the money, without reporting either the job or the charges to the company.)

- 2-He will steal material.
- 3-He will abuse the truck.
- **4**—He will use the truck for personal business or pleasure.
- **5**—The company will lose control over the actual hours worked.
- **6**—The company shouldn't pay for the cost of transportation to and from the job.

Those who are for it contend, for instance, that they don't have room at the shop to park the trucks. Or, they argue that their men have worked for them a long time and can be trusted. Some point out that if the men take the trucks home they will be available for company work after hours. And, they say, the men seem to like the idea.

Regardless of how you stand on this matter or how you are presently handling the situation, chances are you can improve your company's operations and increase revenue by carefully analyzing this problem on an impartial and unbiased basis. But you can't do this unless you are able to conduct the analysis and examine the results from a purely logical standpoint, leaving your emotions completely out of the picture. Your analysis won't mean a thing if you start out with an attitude of "it will never work" or "we tried that before."

How should you go about making such an analysis? Let's start by tackling all of the standard objections to letting the servicemen take your trucks home, and examining each one to see if the objection is valid or if there is an adequate answer to it.

Objection 1 (the serviceman will use the truck for sundowning)—It is true that the temptation to do sundown work is increased by having a fully-equipped truck at his disposal, but the hardened sundowner is going to do it with or without the truck. If the penalty for being caught is great enough, and if the men are made fully aware of this penalty and are convinced that it will stick, it is doubtful that sundowning will increase. Besides, if you want to be absolutely sure, you can install a time and speed recorder on each truck

that will give you an around-the-clock check on when and how the truck is used. (For details of how effectively this works for one contractor, turn to the story on page 51.)

Objection 2 (he will steal material)—If a serviceman wants to steal from you, and you do not have adequate controls to protect you against such theft, he will steal during the time that he has possession of the truck, whether day or night. If you do have adequate inventory control, allowing a man to take a truck home should not increase the hazard of theft.

Objection 3 (he will abuse the truck)—Actually he probably will treat the truck with more care if allowed to take it home. The additional trust you place in him by giving him this privilege should make him feel more responsibility.

Objection 4 (he will use the truck for personal business or pleasure)—This is a real problem, because in a sense he is using the truck for noncompany business when he goes from home to the job or vice versa. There must be a clear understanding with the serviceman that he will use the truck only for this purpose during off hours, and that if he has to use it for personal business he will first get clearance from someone in authority. Again, you must make each man fully aware of extreme penalties in case of violation of this rule. And, as mentioned under Objection 1, a recorder mounted on the truck will give you an exact picture of any extra-curricular use.

Objection 5 (the company will lose control over the actual hours worked)—This objection can be overcome by establishing standard time allowances for various jobs, and then asking for an explanation from the serviceman whenever the time reported varies from this standard. (For a fuller explanation of this practice see "Job Standards will work for you 8 ways" in the December 1959 issue of The Refrigeration & Airconditioning Business.) Actually you don't have any less control with the man going directly to and from home to the job than you do if he goes to and from the shop. He can still loaf in between. Again, a recorder on each truck will help solve this problem.

Objection 6 (the company shouldn't pay for the cost of transportation to and from the job)—The fact is that you pay this in any event. If you pay it to and from the shop, there's no reason why you shouldn't pay it to and from the man's home. Actually in many cases this will amount to less.

Now let's look at the advantages of allowing servicemen to keep their trucks at home and then dispatching them from home. There are two principal factors that combine to make such a program pay dividends: one is operating costs; the other is personnel relations.

Let's look at the cost factors first. Study each

one and estimate how much each could save you:

Taking the truck home saves space needed for parking it. You can put this space to other profitable use.

It lowers your direct labor cost, as the time from shop to job and back is saved.

Since use of the truck to travel to and from work is a fringe benefit worth the cost of owning a second car, you should be able to pay less to a man furnished a truck. The amount will depend on the local situation.

If a man is allowed to take his truck home he will take better care of it, thus lowering repair

You get more work out of each serviceman by cutting down lost time, so this lowers your overhead cost. In busy seasons this extra work is highly profitable, since you generally have more business than you can handle.

This practice could offer a slight decrease in gas and oil consumption because of decreased mileage traveled. This will depend on your location and the general location of the work you are doing. (Of course in some cases mileage may be greater from home to job than from shop to job, so this factor could go up instead of down.) In some cases you will find a man willing to pay the cost of gas to and from the job in return for the privilege of taking the truck home.

Now let's look at this problem from the personnel standpoint. If you allow your men to take their trucks home you will find that this added job benefit makes it easier for you to hire good workers and keep them with you longer. Here are some of the reasons why the serviceman likes this idea:

He saves the cost of an extra car, or of driving his car to and from the shop, or of paying public transportation.

He appreciates the fact you have placed this trust in him.

He is able to get in more productive on-the-job time, as opposed to travel time, and so increases his income.

He does not have to make a costly trip into the shop when work is slow.

Now let's assume that you've made your analysis of this program and have decided to go ahead with it. Here are some pointers that will help you in setting it up and keeping it under control:

- ► Check the traffic flow at the times of day involved and see if dispatching your men from their homes will cut down on travel time by avoiding congested traffic conditions getting in and out of the shop.
- Be sure your truck inventory is controlled and that each truck carries sufficient material to enable it to work several days without coming into the shop.
- Arrange to have men call in for special material so that the foreman can bring it out to the

Continued on page 82

Main Street Cafe
123h Main Street
123h Main Street
Circinnati, Ohio
Circinnati, Ohio
Check and Oil every 90 days.
Check and Oil every 90 days.

CONTRACTOR SCHWARTZ checks service maintenance card for Main Street Cafe.



SET UP FOR SERVICE

49 v

This Cincinnati cooling contractor finds that

SERVICE LEADS TO SALES

by Ron Henry, associate editor

You don't need salesmen when your servicemen bring in your sales leads. That's the good fortune of A. M. Schwartz, Inc., a Cincinnati, Ohio, refrigeration and airconditioning contractor.

"Our servicemen aren't told to go out and sell, but they are the ones who pick up every sales lead we get," emphasizes president A. M. Schwartz. "And, sales represent half of our total business."

How is this accomplished? Schwartz aggressively promotes a preventive maintenance program. He provides good service that is prompt and reliable. As he puts it, "When customers find out what you've got on the ball, they'll listen to what you tell them."

This maintenance program is

the key to the Schwartz sales program. His servicemen build up the customer's confidence while on the job. Soon customers start asking advice about new equipment, new installations, or replacement of old equipment. When the serviceman brings back this information, Schwartz moves into talk business.

"Because of the effect of season on our business, we attempt to restrict all selling to the fall, winter, and early spring, except for emergencies. Our customers gladly cooperate," Schwartz says. "We prefer to have all of our men available for service during June, July and August."

Schwartz has an interesting theory about preventive maintenance. He realizes that all refrigeration and airconditioning equipment needs periodic servicing. "A storeowner usually appoints someone on his staff to do the job," relates Schwartz. "If this fellow fails to oil motors, clean condensers, or change filters, the result is trouble and expense for the storeowner."

When trouble comes, Schwartz gets a service call. And, in the course of conversation, Schwartz mentions his maintenance program. He asks to take over the responsibility of servicing the installation. If the owner agrees, Schwartz has opened the door to regular service and sales opportunities.

No contract is signed for maintenance visits. There's merely a verbal agreement permitting Schwartz to send out a serviceman at regular intervals to check over and adjust the equipment. The time between visits depends on the equipment and how it is used. All work is on a time-and-materials basis.

"There's only one man we can't sell on a maintenance program," says Schwartz. "That's a man who is more particular about equipment care than we are."

Cards Contain Information

A card system controls the program. Each card lists the name and address of the business, frequency of visit, and special instructions. A list of service dates follow this information. When one card has been filled with completed service dates, it is filed and a new card is made out. The number of previous calls is put on this card.

Schwartz schedules visits for the 1st, 7th, 14th and 28th of the month. The contractor says these calls are made within one or two days before or after scheduled dates. Most calls are set up for every 30, 60, or 90 days, but a few accounts need only semi-annual service. Airconditioning accounts are handled monthly between April and November.

By looking through the index cards, it is easy to see the many sorts of accounts Schwartz has obtained. You also can see how long some of these accounts have maintained his service.

Many Accounts Listed

Here are some examples: food store (every 30 days), 32 previous calls; convent (60 days), 59 calls; hospital (30 days), 168 calls; high school (30 days), 111 calls; church (60 days), 20 calls; department store (60 days), 71 calls, and a country club (30 days), 145 calls.

Many cafes, bowling alleys, a State hospital, industrial plants, grocery stores, and butcher shops also are covered.

Two examples illustrate the Continued on page 82



REMODELED PIE CASE puts refrigerated drugs within reach of customers.

From Pie to Penicillin

. . . that's the story of this rebuilt refrigerated case

A LITTLE INGENUITY GOES A LONG WAY in adapting a discarded refrigeration fixture to a completely different use, giving it a new lease on life. Take the example of a Littleton, Colo., dealer who turned an old pie case into a self-service biological display unit that sharply increased prescription sales for a local druggist.

One day the pharmacist decided a refrigerated, self-service unit for antibiotic drugs was a business must. He knew many of his doctor customers disliked the long wait for refrigerated drugs while a clerk went to the rear of the store for them. Other customers, mainly diabetics, also had long waits for insulin supplies.

The serviceman who checks the store's refrigerated storage boxes and display cases suggested using an abandoned pie case for these drugs. "You can have it completely overhauled and install it on the drug counter next to the prescription service section," proposed the serviceman.

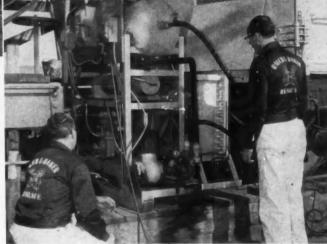
A few days later, the case was in place. Here, on its two levels, the box displays insulin, suppositories, serums, and special drugs requiring continuous refrigeration. Insulin sales, report the druggist, have jumped more than 40%.

Now regular customers help themselves, hold up their purchase for the clerk to see, and walk out. Cost is added to the customer's charge account. No clerk needs wait on these persons, so shopping time is slashed to a minimum for the customer.

And the serviceman who suggested the idea checks the display case on his weekly visit to maintain other equipment.



TRAIN RAILS ARE WELDED without trouble, thanks to the field fabricated aircooled liquid chiller used to cool the welding machine's electrical controls. Mechanics (at right) for the installing contractor inspect the completed job.



Desert Air Helps Cool Rail Welding Controls

Welding railroad rails is a difficult job under the best of conditions. But under a broiling desert sun it becomes even tougher, because the welding machine's controls heat up and won't work properly. These facts added up to a tricky cooling job for one refrigeration contractor.

When a railroad undertook to use its rail welding machine in Nevada, it realized that operations are much different when temperatures sometimes top 115 F. The company found that the effect of the heat upon the welding machine's controls would cause them to malfunction, resulting in many imperfect welds.

Water could not be used to cool the controls because the only water available at the job site had to be hauled in by train or truck. So the problem was handed to Rauch & Baker, airconditioning and refrigeration contractors from Reno, Nev.

Basically, this is what faced them. The company was to weld railroad rails at a portable welder so large it filled two box cars. The rails, often up to ¼ mile in length, are placed on a flat car and butted together at the welding site. The weld is made by compressing the rail ends together for a length of time which is electrically preset by the controls which require the cooling.

The first modification in the welding setup to be made was the changing of the standard condenser's motor from 2 to 3 hp to compensate for the external desert heat.

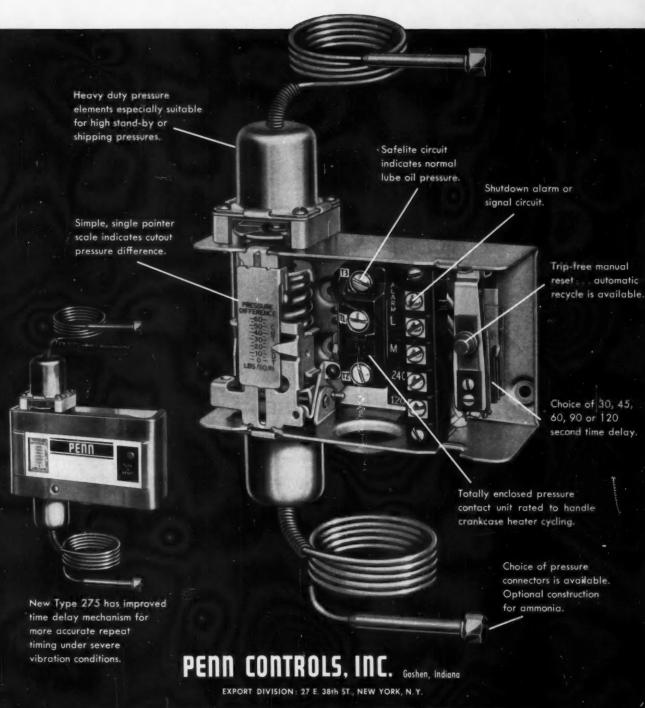
Then an air-cooled unit was devised. It consisted of the coupling of a 3-hp Dunham-Bush condenser and a Brunner compressor to a three-ton Heat-X inner-fin water chilling assembly. Also in the unit, which was field-fabricated, was a 40-gallon water storage tank and a water pump.

This air-cooled liquid chiller proved to be the answer to the problem. It proved so satisfactory that the railroad was able to economically weld up to 12 rails per hour.

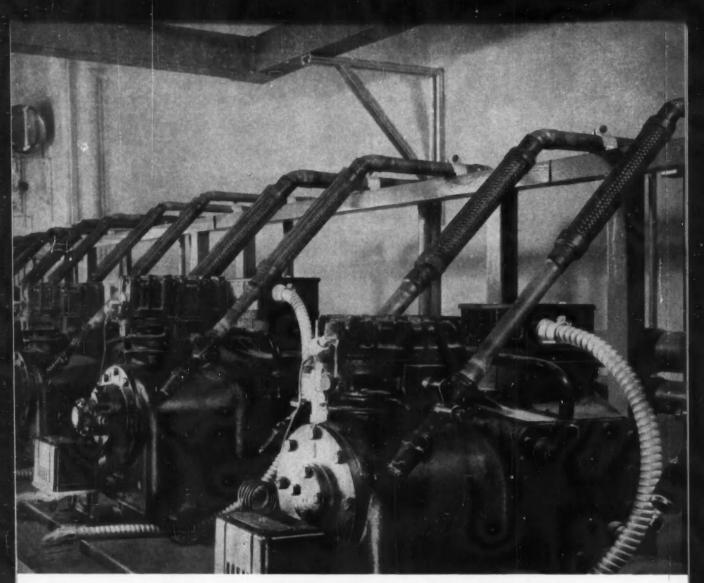
NOW

BETTER THAN EVER!

New Type 275 is the sure way to stop slow pickup or loss of lube oil pressure from crippling pressure-lubricated refrigeration compressors...get the complete story from your wholesaler!



AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



Anaconda VE's in lines running off service valves of compressor units at the Thriftimart market, Buena Park, Calif.

A TIN BRONZE LINE OF DEFENSE—ANACONDA VE'S HALT REFRIGERATION LOSSES caused by vibration. In a refrigeration system, pip-

ing failure sets off a string of breakdown expenses—loss of refrigerant, food spoilage, and loss



Anaconda Vibration Eliminators are identified on the ferrule—are cleaned inside and out, come to you sealed in polystylene envelopes, ready for you to install.

of sales. Anaconda VE's help prevent this by damping and absorbing destructive vibration from the refrigeration units. The tin bronze tubing and braiding in Anaconda VE's have the tensile and fatigue strength to control transfer of vibration for millions of cycles. They require no maintenance, and are available in standard lengths and diameters. For a descriptive folder, write: Anaconda Metal Hose Division, The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

ANACONDA VEIGNATION STATEMENT STATEM

SET UP FOR SERVICE

What Is Your Service Score?

WHAT DO YOU REALLY KNOW, not just guess, about 9. We check all shop-serviced units for cleanliness and appearance before Yes your service department? Everyone knows that a returning them to the customer. poor service department can ruin not only the service business but the contracting business that goes 10. We require all servicemen to have proper repair tools and equipment be-Many service businesses grew up from 1-man opfore they leave for a job. erations without benefit of much planning. For this reason, it's important to make a periodic check of 11. We keep our charges honestly in line with work done, still maintaining operating methods. Take this quiz. You should know, without hesitaa profit. tion, where your service department stands on 12. We answer all service calls in the every point. If you have to stop to think, you'd Yes order of call in and play no favorites better assume that you don't really know. among our customers. The more answers you know now, the more business it can mean for you. 13. We maintain an adequate stock of A table at the end will help you interpret your Yes parts so no job is held up for lack of service score. How do you rate? 1. We handle every service call im-14. We instruct our servicemen not to Yes mediately. If we can't, we tell the cusdiscuss competitors with our customers. tomer why we can't. 15. We carry insurance protecting our 2. We take special care to leave the customer's units while in our possession. Yes customer's premises clean after complet-We tell customers of this benefit. ing a service call. 16. Unless we have a blanket order 3. We train our servicemen to be to do so, we never do work needed, but courteous to all customers. not ordered by the customer. 4. We have replacement or stand-by 17. When we discover work that will units on hand for customers when we very soon need to be done we so inform the customer immediately. cannot repair theirs immediately. 5. We leave a guarantee of our work 18. We have a complete system of with each customer. Then we live up to keeping records of service calls for our Yes that guarantee. protection and that of the customer. 6. We use only guaranteed parts and 19. We train our servicemen to handle materials on every job. And, we make calls as swiftly as possible. This saves sure the customer knows this. the customer's time as well as our own. 20. We frequently check our equip-7. We keep correct service records for all customers so we may help them ment so it will always be ready for use. No plan future needs. Rate Yourself: 15-20 Yes, you're in good shape; 10-14, 8. We never permit unskilled servyou'd better check your service program; 0-9, you'd icemen to work on a unit, even during Yes

better do something quick.

rush times.



Ranco A30 Replacements

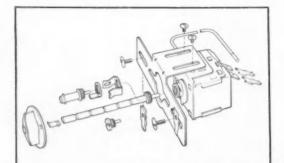
take up less space than your tool kit, yet do the work of 1000 exact replacement controls

It's a fact! Only 23 basic controls and installation packages... and you're in business to handle 9 out of every 10 replacement control calls. Now you can carry an inventory of refrigeration and air conditioning controls right in your truck for on-the-job control replacements and eliminate costly, time-

consuming trips back to your shop or wholesaler. That means you service more units each day, increase your weekly dollar volume, build more customer satisfaction.

Check your wholesaler today or tomorrow for new Ranco A30 Replacements. 23 controls do the work of 1000...cover 90% of your job applications for household refrigeration, freezers, water coolers, beverage coolers, and air conditioner control replacements.

What could be easier, faster . . . more profitable?





In Canada: Ranco Controls, Canada, Ltd., Toronto 18, Ontario

Efficient Purging Can Cut Operating Costs

EVERY REFRIGERATING ENGINEER and plant operating engineer knows that air (which means any non-condensible gas) in a refrigeration system spells trouble.

If it gets in the condenser it will raise head pressure, because air is a very effective insulator. When condenser surfaces are crowded with air molecules, refrigerant molecules find it difficult to reach the cold surface.

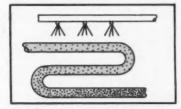


FIG. 1—Air, represented by black dots, accumulates at end of evaporative condenser, keeping refrigerant away from cool surface. This, in effect, reduces condenser size.

Thus the air reduces the amount of condenser surface exposed to the refrigerant (see Fig. 1).

This can be offset only by increasing the temperature (and pressure) of the refrigerant gas so that all of the gas coming from the compressor will be condensed. There are several reasons why this is undesirable:

Operating costs go up. Each 4 lbs. of excess head pressure caused by air increases compressor power costs 2% and reduces compressor capacity 1%. This 4-2-1 ratio applies to all commonly used refrigerants, as well as wide differences in suction and head pressures.

The increase in power cost

comes out of profit. The decrease in compressor capacity means more hours of operation to get the same amount of refrigeration. And the losses due to reduced refrigeration capacity may far exceed the extra cost of operating the compressor against excess head pressure.

Cooling water is required in greater quantities because air in the condenser reduces heat transfer efficiency.

Compressor wear and tear is greater because excess head pressure increases strain on the bearings and on the driving motor. Higher discharge temperatures shorten the life of valves and promote breakdown of oil.

Gasket failures become more frequent with increased head pressure. In fact, some so-called ammonia explosions have been traced to the presence of a noncondensible gas in the system.

In most refrigeration systems it is practically impossible to keep air out. When suction pressure is below atmospheric, air leaks in through valve packing and compressor seals. Even when suction side pressure is above atmospheric, air can get into the system in a number of other ways:

 When system is open for compressor repairs, coil cleaning, or replacement of coils or other components.

(2) When connecting or disconnecting hoses used for discharging refrigerated trucks or

(3) When adding oil.

(4) Through breakdown of refrigerant or lubricating oil.

(5) From impurities in the refrigerant.

To tell if air is present, check the condenser pressure and the temperature of the refrigerant leaving the condenser against the data in Table A.

If, for example, your ammonia temperature is 84 F the theoretical condenser pressure should be 149 lbs. If your gage reads 169 lbs., you have 20 lbs. excess pressure that is increasing power costs 10% and reducing compressor capacity 5%.

If you have a mercury well in the liquid line from the condenser, liquid temperatures are

Continued on next page

If your Refriger-	The Gage	Pressure S	Should Be
ant Tem-	For	For	For
	Ammonia	Freon 12	Freon 22
	(in lbs.)	(in lbs.)	(in lbs.)
44	64.7	40.70	75.04
	67.9	42.65	78.18
48	71.1	44.65	81.40
50	74.5	46.69	84.70
52	78.0	48.79	88.10
54	81.5	50.93	91.5
56	85.2	53.14	95.1
58	89.0	55.40	98.8
60	92.9	57.71	102.5
62	96.9	60.07	106.3
64	101.0	62.50	110.2
66	105.3	64.97	114.2
68	109.6	67.54	118.3
70	114.1	70.12	122.5
72	118.7	72.80	126.8
74	123.4	75.50	131.2
76	128.3	78.30	135.7
78	133.2	81.15	140.3
80	138.3	84.06	145.0
82	143.6	87.00	149.8
84	149.0	90.1	154.7
86	154.5	93.2	159.8
88	160.1	96.4	164.9
90	165.9	99.6	170.1
92	171.9	103.0	175.4
94	178.0	106.3	180.9
96	184.2	109.8	186.5
98	190.6	113.3	192.1
100	197.2	116.9	197.9
102	203.9	120.6	203.8
104	210.7	124.3	209.9
106	217.8	128.1	216.0
108	225.0	132.1	222.3 228.7
110	232.3	136.0	

EFFICIENT PURGING

Continued from preceding page

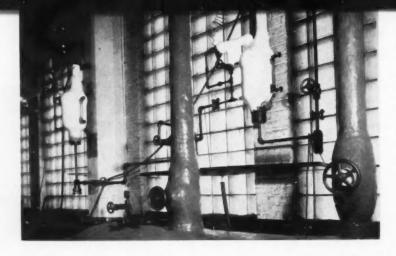
FIG. 2—Two refrigerated purgers installed in a 500-ton, two-stage refrigeration system. These units automatically separate air by condensing refrigerent gas and then releasing air to the atmosphere.

easy to take. If not, you can get reasonably good readings by strapping the bulb of an immersion thermometer to the liquid line.

If air in the condenser is the cause of the trouble, the air must be purged from the system before head pressure can be brought down to the proper level.

Purging can be done manually or automatically. Manual purging is too expensive to be practical, however, except on very small machines. This fact is apparent from Tables B and C.

Table B, for example, shows that manual purging of 1 cu.ft. of air from an ammonia system at 90 F and only 4 lbs. excess pressure due to air will waste 51 cu.ft. of NH₃ (ammonia). Table C shows that manually purging the same amount of air from an F-12 system under the same conditions will waste 32.3 cu.ft. of refrigerant.



Purging must be done slowly to give the air molecules time to migrate to the purge connections. So manual purging takes a lot of time. If you cut the time short, not all of the air will be removed and the bad effects of air in the condenser will continue at a reduced rate. What's more, the escaping gas may be disagreeable or even dangerous. The result is that manual purging often is postponed or avoided because of the time and trouble involved.

Refrigerated purging, on the other hand, overcomes all of these problems.

Refer again to Table B. At zero F in the purger and head pressure of 157 psia, only .25 of 1 cu.ft. of NH₃ will be lost for every cubic foot of air purged. Contrast this with the 42.6 cu.ft. of ammonia lost with manual purging at 80 F and only 4 lbs. excess pressure due to air. Refrigerated purging

under these conditions is 170 times as efficient as manual purging from the standpoint of refrigerant gas lost.

Using Table C you can make a similar comparison showing that with F-12 under the same conditions of temperature and pressure due to air that refrigerated purging is 84.8 times as efficient.

The purger that makes this efficiency possible is a simple refrigerated device which automatically and completely separates air by condensing refrigerant gas and then releasing the air to the atmosphere (see Fig. 2). Installed as a permanent part of the system it not only eliminates the problems of excess head pressure but also overcomes the objections of manual purging.

This article is adapted from material prepared by Armstrong Machine Works, Three Rivers, Mich.

TABLE A—High loss of ammonia from manual purging (90 to 70 F) vs. loss with refrigerated purging (30 to -20 F).

TABLE C—High loss of Freon-12 from menual purging (90 to 70 F) vs. loss with refrigerated purging (30 to -20 F).

Temp.	NH ₃ PSIA	Air PSIA	Total PSIA	Cu.Ft. of NH ₃ Lost per cu.ft. of air purged
90°	180.6	4 8 14.7	184.6 188.6 195.3	51.0 25.5 13.9
80°	153.0	4 8 14.7	157 161 167.7	42.6 21.3 11.6
70°	128.8	4 8 14.7	132.8 136.8 143.5	35.3 17.7 9.6
30°	59.74	97.26	157	.64
20°	48.21	108.79	157	.45
10°	38.51	118.49	157	.33
0°	30.42	126.58	157	.25
—10°	23.74	133.26	157	.18
-20°	18.30	138.70	157	.13

Temp.	PSIA Freon	PSIA Air	Total PSIA	Freon 12 Lost per cu.ft. of air purged
90°	114.3	4 8 14.7	118.3 122.3 129	32.3 16.1 8.8
80°	98.76	4 8 14.7	102.76 106.76 113.46	26.3 13.1 7.15
70°	84.82	4 8 14.7	88.82 92.82 99.52	23.2 11.6 6.3
30°	43.16	59.60	102.76	.77
20°	35.75	67.01	102.76	.55
10°	29.35	73.41	102.76	.41
0°	23.87	78.89	102.76	.31
—10°	19.20	83.56	102.76	.23
-20°	15.28	87.48	102.76	.18

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This remarkable new duct liner has greater noise absorption and

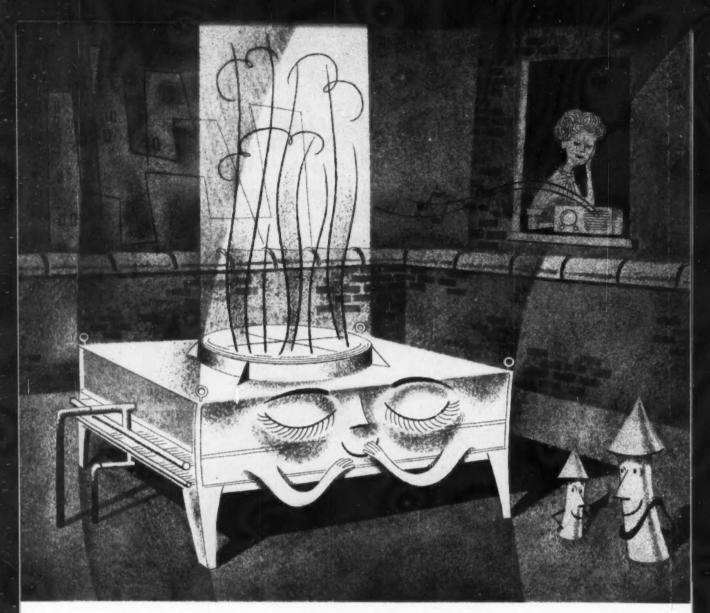
thermal resistance. It has earned the lowest Underwriters' fire hazard rating for flexible, coated fiber glass duct liners.

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SERVICEMAN D. W. PRINCE puts a new recording disc in his truck before starting out in the morning. He carries a key to the speed recorder device.



"IT CHECKS OUT," service manager Walter Sandusky (right) tells Prince the next day. Sandusky has compared his daily assignment sheets with the information on the recorder disc. Owner J. P. Stewart (center) checks to make sure Prince spent a full day on the job and did not speed between service calls.

Truck Recorders Control Service Travel

IF A PIECE OF NEW EQUIPMENT starts paying for itself the first day it's in use that's something. Yet that's how John P. Stewart feels about the speed recorders he installed on five of his service trucks. He's president of J. P. Stewart Co., Inc., an aggressive Cleveland, Ohio, commercial refrigeration contractor.

Speed recorders give Stewart an instant check on truck speed, miles traveled, and the amount of time the truck is busy and idle. This data is automatically recorded on a rotating, wax-coated, printed circular disc by three styli.

"These recorders pay for themselves four ways," says Stewart. Now the firm knows exactly how much time is being used in getting to and from service calls; how fast trucks are being driven, and how much idle time there is during the day.

Second, insurance companies give the firm sizable premium reductions since Stewart can now present visual proof servicemen travel at sane speeds. Third, since men take these trucks home at night, Stewart knows if the vehicle is being used for unauthorized personal driving. And, fourth, there's no need to keep involved records of dispatching times, arrival times, and time on the job. It's all on the discs.

The serviceman has very little to do with actual operation of the recorder since all data is recorded automatically. He removes the old disc each morning and installs a new one. He turns in the disc with his daily time ticket.

On the highway, servicemen can preset the pushbutton speed limit selector to receive warning when this limit has been passed. These buttons may be pushed as the truck travels through various speed zones and, when speed is exceeded, a red light warns the driver.

When the serviceman turns in his disc and time ticket, the service manager checks one against the other, paying particular attention to night calls. If a disc shows the truck was used at night, a corresponding service call should be listed on the time ticket.

These discs are spot checked by Stewart every day and filed for future use. Any discrepancy between disc and ticket is called to the attention of the serviceman.

Stewart put the speed recorders on his trucks in December. Since then the firm has switched from using a foreign-made vehicle to an American-made Continued on page 87

SET UP FOR SERVICE





Do your servicemen look like THIS or THIS?

Service uniforms do make a

PROPER UNIFORMS for your servicemen can prove a big asset to your company.

They can turn these men into living, walking advertisements for your products and your services.

They can help build good will with your customers and boost morale among your employees.

morale among your employees. They can help keep costs down by lessening the possibility of on-the-job accidents.

A properly marked uniform immediately identifies your serviceman with your company, just as the sign on your truck does. The customer knows this is the mechanic he called. He gets another fast visual sell on your organization and its activities.

Job Safety Important

Good impressions always count. To your customer, your serviceman is your company. A neat, clean, attractive uniform will help make the kind of impression you want your company to make. The customer will get the idea that your whole busi-

ness operates on this same quality level. And a serviceman in this kind of a uniform can't help but take more pride in his personal appearance and in his job.

Job safety is more important today than ever before. With compensation claims skyrocketing out of sight, the cost of one serious on-the-job accident could cover the cost of a well planned uniform program for many years.

If your servicemen report for work in clothes they furnish themselves, they often are inviting an accident. Usually, such clothing is the oldest, dirtiest, and most ill fitting that the employee owns. He wears it to work because "it's not good enough for anything else." And it's filled with built-in accident hazards.

Loose or floppy clothing, such as trousers with cuffs, can easily catch on a projection and cause a fall. If work clothes become soaked with oils or chemicals, the wearer becomes a walking fire hazard that can be touched off by the simple act of lighting a cigarette. Poorly designed or maintained work clothes can present a problem of dangling ties that can get caught in moving machinery, or skin irritations resulting from toxic materials or just plain lack of cleanliness.

Practical Pointers Listed

If you rent your uniforms from an industrial launderer, you'll find that all rips or tears are mended and all buttons or zippers replaced or repaired immediately after laundering and before being returned to you. This eliminates many potential hazards. If you don't use such a service, you would be wise to insist that your employees follow this same procedure.

Here are some practical pointers on selecting the right uniforms for your servicemen:

 Be sure they are practical, and suited to the job conditions under which they will be worn.

 Make certain they will stand up under the type of wear they will get. Test one outfit by having it laundered several times after actual usage it is likely to WANT HELP in selecting the right uniform for your servicemen? You can get it from the Institute of Industrial Launderers, 1833
Jefferson Place, N.W., Washington 6, D.C. This trade association offers a free and impartial consulting service. Its field men will gladly talk over with you any uniform problems. They will try to guide you in making sure the uniform you select meets your job requirements.

difference

meet. You can then check such factors as shrinkage, color fastness, and loss of tensile strength.

• Select cotton garments. They wear better, can be laundered easily and inexpensively, and keep their attractive appearance for a long time.

 Choose standard colors. A wide variety is available and they wear better than special shades.

• Avoid fancy "fruit salad" features. Make your servicemen look like the competent technicians they are, not like a platoon of comic-opera generals. You'll find a simple uniform is more practical and less expensive. It will give you longer and more satisfactory service.

● Catch the public eye with a well designed company emblem. Don't make it too big or too gaudy, but make it large enough and plain enough so that your serviceman can be identified immediately with your company. This will help you get the most out of your uniforms in customer goodwill and advertising value.

WHY COOL A FACTORY?

"Factory owners must be able to realize a return on their investment in cooling. No matter how important the comfort benefits are in employee relations, the chief justification for factory cooling must be increased production through improved efficiency," says Carl W. Millsom, vice president, Perfection Div., Hupp Corp.

Speaking before executives of 29 eastern utilities at the Interstate Power Club meeting in New York, Millsom advised the utility executives how to promote airconditioning in factories. He stressed selling the economic benefits and how small an increase in worker efficiency pays for cooling.

Millsom pointed out several other important factors which include:

Claims of huge savings, even though valid, may hurt more than help. Particularly when it takes a production increase of only 1½ to 3% to justify airconditioning.

Studies by government agencies and independent engineers point production increases of 22 to 28% in general manufacturing. These claims too often are too good to be true to the cautious management.

Not all plants, or all areas in all plants, can be cooled economically. As a suggested guide the factory owner should not spend more than ¼ of the total gross annual wages of the workers in the area on airconditioning. Where high temperature sources are present or few workers, this rule would indicate the cooling wouldn't pay. However spot cooling in rest areas such as near blast furnaces in steel mills can provide some comfort for workers in these conditions.

Larger package units economically installed are a prime factor in the acceptance of airconditioning in factory buildings. Air cooled package units, once limited in size, are now available up to 75 tons.

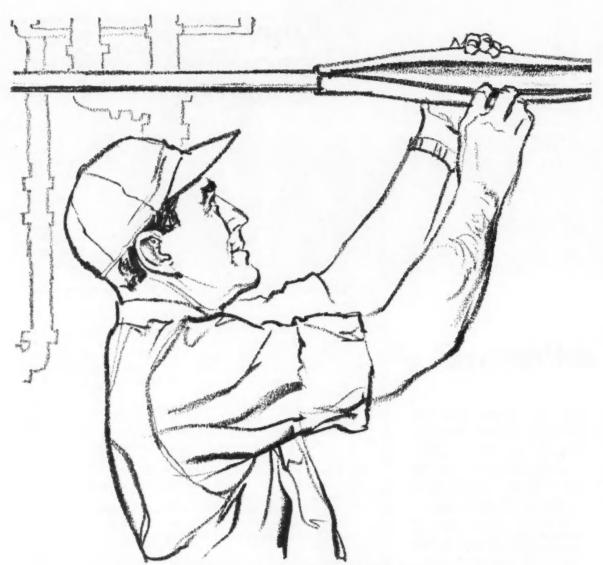
One of the first things management wants to know is what type of equipment is best for his plant. The complete built-up system has its place where exact temperatures, humidities or special filtration is required. But the packaged system can offer lowest capital investment and flexibility. It's also easier to install and service, easier to buy, either through bank loan or leasing.

The heat pump offers even greater economies since in winter, heat pumps may use otherwise waste heat from plant processes.

Conditions should be maintained to produce an economically sound installation. The aim should be for the practical, not the optimum airconditioning. It isn't necessary to design for a 72 F temperature when 75 or 80 F can provide top efficiency.

Other economies which can be made include not figuring the whole 20 or 30' high area. The conditioned air can be delivered at a height of 8' and the designer can figure the space being cooled has a ceiling at 12' since the cool air will not rise.

Manufacturing people know how much airconditioning has increased sales in all types of mercantile establishments, and has saved and increased attendance at theatres. Many of them have airconditioned their offices. Now they can gain ever greater benefits with practical cooling in their manufacturing areas.



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Once you discover how easily Vasco-Cel slips into place on pipe or tubing, you can appreciate its savings to you in labor right away. This tough, pliant Neoprene tubing is soft, clean and odorless—slides right on over lengths of pipe, even over pipe with bends. For pipe already installed, it can be slit lengthwise, slipped on, and sealed with VascoCel Adhesive. Fittings for tees, elbows and crosses can be made easily and accurately with a saw-edged knife, miter box and adhesive.

VascoCel has many other features

that mean you are giving your customers first-class insulation. For example, its closed-cell structure is an effective vapor seal; a K-Factor of .30 prevents pipe drip. It will hold heat in pipes carrying temperatures up to 220°F. Gives extra safety, too. It is made from material that will not feed a fire or carry flames along pipes from room to room. Resists acids, oil and fungus. VascoCelisfabricated in 6-ft. lengths, with ID's from 3/8 to 3/8 in. Available through your nearest "Virginia" wholesaler. For more information, write Refrigera-

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APPLICATIONS Manual

by Arthur H. Farr

THE HEAT PUMP PRIMER - PART 10

CONTINUING THE COMPARISON of water-source and air-source heat pumps, let us proceed to estimate the cost of operation of the water-source heat pump.

Substitution in the simplified degree-day formula in Part 7 of the Heat Pump Primer (March 1960 issue) gave us the seasonal heating requirement for our Columbus, Ohio, sample residence.

This calculation was:

$$H = KD \quad \frac{h}{1000}$$

H=365.4 Btu per degree day x 5615 degree days x $\frac{67,700}{1000}$ Btu per season

Next, we convert this total to equivalent kwh required by dividing by 3413 Btu per kw.

Equivalent kwh =
$$\frac{138,900,000}{3413}$$
 = 40,700

Now, to arrive at the net portion chargeable to the heat pump, we must subtract the seasonal supplemental heat requirements as calculated in Part 9 of the Primer (July 1960) which was 338 kwh per season. Therefore,

Now, if we divide this total kwh by the C.O.P. of the water source heat pump including well pump (3.44, as calculated in Part 9) we arrive at the total kwh input to the heat pump and auxiliary well water pump.

Then, add to this figure the seasonal kwh input to the supplemental electric heat.

A little less conservative approach would be to exclude the power input to the well water pump in our calculation of C.O.P., and then add the total input to the well pump for the



season in the same manner that we consider supplemental heaters. By way of comparison only, this method of calculation would result in the following figures:

Now add the supplemental heat input and the input to the well pump motor operating for approximately 1691 hours per heating season.

= 10,950 kwh

This method reflects a total which is about 1% less than the first method which includes the input to the well pump as a part of the C.O.P. determination. The first method is perhaps better because it produces a somewhat more conservative estimate, but the second method will give a more realistic answer to compare results of the air-source vs. water-source heat pumps.

In Part 8 of the Primer (May 1960), we found that the cooling season in Columbus was represented by 650 hours of operation, so the cooling season input is as follows:

650 hours x 4.47 kw = 2906 kwh

Combining the above with the heating season input permits us to calculate the annual cost of operation of the water-to-air heat pump.

Heating season 12,068 kwh x \$.015 = \$181.02 Cooling season 2,906 kwh x \$.015 = 43.59 Total annual cost \$224.61

This total can now be compared with the \$344.19 annual cost of operating an air-source heat pump in the same residence as determined in Part 8. Thus, a savings of almost 35% of the annual operating cost could be realized by substituting a water-source for the original air-source heat pump in our sample residence.

-Contractors

Loan Expert Stresses Urgent Need For Good Cost Accounting Methods

"Contractors must know just what their costs are," says George H. Moore, "and they may get this information by adopting a good cost accounting system." He's a vice-president of Bank of America (California) and a specialist in contractor loans.

"There are many variations of cost accounting available, and one method should be chosen to best suit the individual contractor's purpose," Moore suggests. He says this system should be used to develop certain standard methods of calculating costs and of reporting these costs and corresponding incomes.

Three Methods for Reporting

Moore says contractors now use three basic methods to report incomes. First, there's the cash basis where only receipts and disbursements are recorded. "From the viewpoint of the bank or other creditors, this system is nearly worthless so far as knowing where the contractor is at a given time," Moore reports.

The second method is the accrual basis, where the contractor's billings may be shown less cost to date, or profit is shown computed on a percentage of completion basis. The banker says this method is preferred by some creditors since it is the most commonly used system.

Third, some contractors use the completed contract basis. Here, gross income relating to a given contract is reported for the taxable year in which the contract is adopted. Moore says this method is preferred by many contractors since they don't pay taxes on a job which might wind up in a loss.

Moore urges contractors to ask national or local Refrigeration and Airconditioning Contractors Association chapters for their aid in researching the best accounting method. "However," he points out, "the method chosen should indicate clearly to the contractor what he wants to know about his own business.

Contractor Should Know Costs

"Cost accounting alone will not insure a profit on every job. It does give the contractor the basic information on which to make an intelligent bid. Bid figures depend on the factors governing each contractor. It is imperative that each contractor should know his costs so his bid may be intelligent enough to provide a profit, taking into consideration all other factors."

Once a contractor has built up good cost records, and presents these figures on a consistent basis, Moore figures it should be possible to go one step further and report these figures to some central group, perhaps RACCA national. "This information could be processed and sifted. It could be sorted as to various types and sizes of airconditioning contractors and industry figures could be presented on profits and losses," he suggests.

Moore says individual contractors could look at industry figures, find his particular classification, and see if his financial setup varies from the norm. Once he finds his position in relation to the industry, the contractor could use this information as a starting point to learn why his organization is out of line.

"Whatever information the contractor could gather from this industry report would help him set a goal for improvement," Moore states. Individual contractors also could use these figures to get credit from his bankers and suppliers, if he is able to show how his figures compare favorably with those of a stable industry, he says.

Nationwide Cooperation Needed

"Even if the contractor's figures fall below the norm, he may explain how his operation differs from the average setup and, for this reason, his operation varies from the average," according to Moore.

"This, I believe, will result in the whole economy for this industry being on a better and firmer basis. But, the whole approach will take a considerable amount of cooperation from contractors on a nationwide scale.



COMFORTABLE AT THE SPEAKERS' TABLE after a rainy time at the 13th annual golf tourney held by RACCA of Chicago are these industry representatives. Left to right are: Robert Campbell, Wilt Climete Control Co.; Oliver P. Croze, The Crose Co.; Robert T. Strube and John J. Englehart, both of Pipe Fitters Local 597; Guido F. Restagno, Resco Refrigeration Service, Inc.; Albert H. Bielke, president, Pipe Fitters Local 597; Daniel M. Brown, Chicago RACCA president, Systems Engineering Corp.; Mrs. Edna Berggren, Chicago RACCA executive secretary; James Darby, Pipe Fitters Local 597; James J. McKeague, acting supervisor, refrigeration dept., City of Chicago; Walter McCarty, McCarty Bros. Equipment Corp., and D. C. Anderson, Allied Chemicals & Dye Corp.

Unitary Airconditioner Sales Up 10%; Heat Pump Shipments Show Biggest Gain

FIRST-QUARTER MANUFACTURERS' SHIPMENTS of unitary airconditioners showed a 10% gain over a similar period last year. These figures were reported to Air-Conditioning and Refrigeration Institute by 57 manufacturers.

For the fourth consecutive reporting period, shipments of unitary heat pumps showed the greatest increase. Self-contained pumps shipped from January through March, 5172 units, were 40% ahead of 1959. Of all heat pumps shipped (7610 units) self-contained models represented 70% of all heat pump shipments.

The first three-month figures list shipments of unitary airconditioners, including self-contained, remote condenser, refrigeration chassis, year-round airconditioners, heat pumps, and split systems. However, room airconditioners, reversible or otherwise, are not included.

Split-systems showed a gain of 10% with airconditioning coils (without blower) leading the way with a 28% jump. Airconditioning coils (with blower) were up 23% and airconditioning condensing units gained 15%.

Shipments of year-round units (excluding heat pumps) were down 6%.

Total January-March shipments were 62,856 units.

These 57 manufacturers reported shipments to the industry association.

Airtemp Div., Chrysler Corp.; Amana Refrigeration, Inc.; American Furnace Co.; American-Standard Air Conditioning Div.; American-Standard Industrial Div.; Arkla Air Conditioning Corp.; Armstrong Furnace Co.; Carrier Corp.; Cleveland Steel Products Corp.; Cobell Industries, Inc.; Coleman Co., Inc.; Columbia Specialty Co., Inc.; Coolerator Div., McGraw-Edison Co.; Crane Co., Plumbing, Heating & A/C Group; Curtis Mfg. Co.; Fedders Corp.; Florida Warren Corp.; Forston Co.; Fraser & Johnston Co.; Frick Co., Inc.; Friedrich Refrigerators, Inc.; Gaffers & Sattler Div., Utility Appliance Corp.; General Electric Co.; Goettle Bros., Metal Products Inc.; Hall-Neal Furnace Co.; Heat-X, Inc.; Heil-Queker Corp.; Holly-General Co.; Hupp Corp. — Perfection Industries, Typhoon Air Conditioning Co., Typhoon Heat Pump Co.; International Heater Co.; International Metal Products Div.; Iron Fireman Mfg. Co.; Janitrol Heating & Air Conditioning Div.; Laurel Products Corp.; Lennox Industries Inc.; Majestic Co., Inc.; Mathes Co.; Melchior, Armstrong, Dessau Co., Inc. (March only); Miami Products, Inc.; Mueller Climatrol, Div. of Worthington Corp.; C. A. Olsen Mfg. Co.; Sewart-Warner Corp., U. S. Machine Div.; Thatcher Furnace Co.; Therm-Air Mfg. Co.; Trane Co.; Southwest Mfg. Co.; Stewart-Warner Corp., U. S. Machine Div.; Thatcher Furnace Co.; Herm-Air Mfg. Co.; Trane Co.; Tuck-aire Furnace Co.; United States Air Conditioning Corp.; Westinghouse Electric Corp.; Williamson Co.; Worthington Corp.; York Div. of Borg-Warner Corp.

Complete figures are presented on this and the following page.

Condensed Summary of Unitary Airconditioner Shipments (January-March 1960)

	By Condense	er-Type		
SIZE	Air or Evaporatively Cooled	Water- Cooled BO	Total Units	% Change from 1959
Under 27,000 Btu/hr	8,258	185	8,443	-0-
27,000-32,999 Btu/hr	4.592	23	4,615	-10%
33,000-41,999 Btu/hr	18,557	1,856	20,413	+5%
42,000-53,999 Btu/hr	6.638	1.639	8,277	+46%
54,000-64,999 Btu/hr	7.457	3,664	*11,121	+23%
65,000-96,999 Btu/hr	3,401	1.663	5.064	+12%
97,000-134,999 Btu/hr	1,158	1,305	2,463	-10%
135,000-184,999 Btu/hr	387	633	1,020	-13%
185,000-249,999 Btu/hr	229	433	662	+35%
250,000-319,999 Btu/hr	49	338	387	+1%
320,000-379,999 Btu/hr	65	247	312	+74%
380,000 Btu/hr and over	5	74	79	+55%
TOTAL	50,796	12,060	62,856	+10%

This condensed summary by size includes shipments of: (1) air-conditioners (except window and wall types), with or without condensers and refrigeration chassis; (2) year-round air-conditioners, with or without condensers; (3) heat pumps (except room air-conditioners), self-contained and other than self-con-

tained; (4) split systems, air-conditioning condensing units only. It does not include shipments of air-conditioning coils with or without blowers. The total figure includes export shipments of 1,910 units for the three-month period. (Detailed figures broken down by product classification are presented on the next page.)

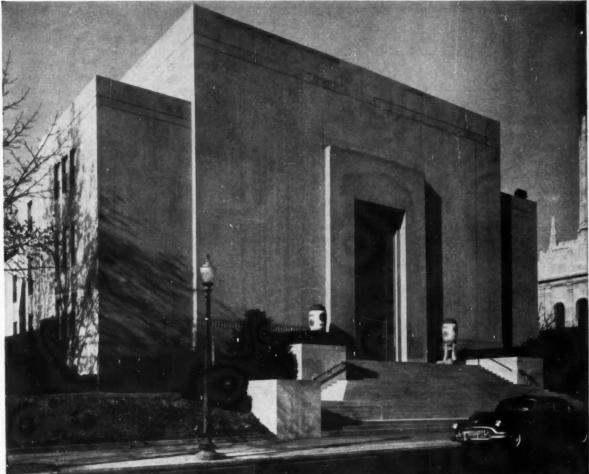
Unitary Airconditioner Shipments by Manufacturers January - March 1960

Reported by Unitary Air-Conditioner Section, Air-Conditioning and Refrigeration Institute

(Condensed summary by size appears on preceding page)

No. of Cos.								
Under 37,000 Blu/hr 314 3,574 75.26 75.46 75				_			Year-to-date	
	DESCRIPT	30	DF PRODUCT	LINE		aber mrer type)		94
				oʻ	Air or Evap- oretively	Water	TOTAL	Change
Under 37,000 Blu/hr 314 3,574 72 3,646 45					Cooled	80		1959
The continue of the continue	Jo.	L	Under	514	3,574	72	3.646	+57
### 33,000-11,999 Rus/hr	1960	IA1	-	515	594		594	+50%
### 42.000-31,999 Bus/hr	19-85-61	LH	-	516	3,475	71	3,546	+29%
### 18.000-24.999 Bus/hr		oz	-	517	879	2	881	
## 63,000-56,979 Bu/hr 519 7 92 99 99 99 99 99 99 99 99 99 99 99 99		180	-	518	180	45	225	+160%
		2044	-	510	7	92	66	
## 77,000-212,999 Bus/hr 521			-	520	,	18	18	-79%
## 58 13.006.31,999 Btu/hr 522			-	521				
The colon of the	SELP.		-	522			- 6	76+
© Eg 54,000-64,879 Buv/hr 524 7,1725 1,325 F 26,000-64,879 Buv/hr 235 7,1725 1,325 133,000-184,879 Buv/hr 226 29 1,322 1,325 133,000-184,879 Buv/hr 226 633 639 422 431 133,000-184,879 Buv/hr 226 632 633 343 343 200,000-37,979 Buv/hr 329 10 247 254 254 200,000-37,979 Buv/hr 343 343 12,47 16,309 124 21,000-23,97 Buv/hr 343 346 312 348 348 348 22,000-23,97 Buv/hr 343 346 312 348 348 348 348 348 348 348 44,000-23,979 Buv/hr 343 346 312 221 43 43 45,000-64,879 Buv/hr 343 346 346 346 348 43 43 45,000-62,879 Buv/hr 344 37 346 346 346	CONTAGNED		٠	523		4		
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135,000-184,899 Bhu/hr 539 6 633 639 185,000-289 Bhu/hr 539 6 633 644 185,000-289 Bhu/hr 539 10 247 257 300,000-379;89 Bhu/hr 539 10 247 257 300,000-379;89 Bhu/hr 540 27 27 30,000-31,999 Bhu/hr 543 348 348 348 43,000-41,999 Bhu/hr 549 Bhu/hr 540 Bhu	(1)	L	97,000-134,999 Bru/hr	526	29	1,272	1,301	-162
183,000-240; 999 Bus/hr 529 9 4,22 4,31 4,52 4,31 4,52 4,31 4,52 4,52 4,31 4,52 4,52 4,44 4,52 4,52 4,52 4,52 4,44 4,52 4		_	135,000-184,999 Bru/hr	527	9	633	639	-38%
250,000-319-999 Bus/hr 329 6 338 344 4 320,000-319-999 Bus/hr 320 10 247 257 4 320,000-379-99 Bus/hr 341 2 7 528 16,309 4 320,000-379-99 Bus/hr 341 342		_	185,000-249,999 Bru/hr	528	6	422	431	24-
\$200,000,37°,999 Btu/ht \$39 10 24.7 25.7 4		ירו	250,000-319,999 Btu/hr	529	9	338	344	-8%
380,000 Blucke and ever 331 2 74 76 76 76 70 70 70 70 70		٧_	320,000-375,979 Bruch:	530	10	247	257	+50%
### TOTAL \$12 8,78 7,528 16,309				531	2	74	76	+52%
### 12,000-12,000 Blus/hv \$40			TOTAL	532	100	7,528		+67
27,000-21,249 Bus/hr 541 124 124 1200-21,249 Bus/hr 542 1200-21,999 Bus/hr 542 1200-21,999 Bus/hr 543 1200-21,999 Bus/hr 544 1200-21,999 Bus/hr 544 1200-14,999 Bus/hr 544 1200-14,999 Bus/hr 544 1200-14,999 Bus/hr 546 1212 1212 1212 1212 1212 1212 1212 12	Jo		Under 27,000 Btu/hr	540				
### 124 000-41, 999 Bru/hr	1960-9		27,000-32,999 Biss he	541			_	
### 42 000-33,999 Bus/hr	1959-11		33,000-41,999 Bru/hr	542	124		124	-712-
84,000-64 FPP Bur/hr 544 3105 305 305 365 65,000-010-010-010-010-010-010-010-010-010			42 000-53,999 Btu/hr	543				
86,000-96,699 But/hr 545 3148 348 348 348 348 348 348 348 348 348 3			\$4,000-64 PPE Btu/hr	54.4	305		305	+39%
### 97,000-134,999 Bus/hr \$46 212 212 135,000-134,999 Bus/hr \$47 221 221 135,000-134,999 Bus/hr \$49 322 280,000-249,999 Bus/hr \$49 64,39 280,000-279,999 Bus/hr \$49 66,79 27,000-379,999 Bus/hr \$40 - 1,390 27,000-37,999 Bus/hr \$40 - 2,599 47,000-45,999 Bus/hr \$43 55,000-45,999 Bus/hr \$45 55,000-45,999 Bus/hr \$45 55,000-45,999 Bus/hr \$45 55,000-46,999 Bus/hr \$45 56,000-46,999 Bus/hr \$45 56,000-4			65,000-96,999 Btu/hr	545	348		348	+8%
135,000-184,999 Buu/hr 547 221 221 221 221 135,000-184,999 Buu/hr 549 28,000-19,999 Buu/hr 549 58} 280,000-19,999 Buu/hr 549 58} 280,000-19,999 Buu/hr 540,000-19,999 Buu/hr 540,000-19,999 Buu/hr 540,000-19,999 Buu/hr 540,000-41,999 Buu/hr 540	CONDENSES		97,000-134,999 Bru/hr	546	212		212	+22%
185,000-249; 999 Bu/Vir 549 79 79 79 79 79 79 79	TYPE		135,000-184,999 Btu/lw	547	221		221	+55%
280,000-319,999 Bits/fer 549 643 643 58 58 58 58 58 58 58 5	(2)		185,000-249,999 Bru/hr	240	79		79	
380,000-379; 999 8hz/hr 550 58 7 58 7 58 7 58 7 58 7 58 7 58 7			250,000-319,999 Bru/hr	249	43		43	+1862
380,000 Bhv/hr end over \$51 Under 27,000 Bhv/hr \$50 27,000-21,999 Bhv/hr \$61 42,000-41,999 Bhv/hr \$63 43,000-41,999 Bhv/hr \$63 43,000-81,999 Bhv/hr \$63 43,000-81,999 Bhv/hr \$63 47,000 Bhv/hr end over \$64			320,000-379,999 Bru/hr	850	185		58 1	
. Under 27 000 Bu/hr \$40 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 Bu/hr \$4,000-64,199 Bu/hr \$45.00-63,999 Bu/hr \$45.00-64,999 Bu/hr \$45.0			380,000 Bhu/hr and over	1551				
10 Total 1 Tot			TOTAL	552	1.390		1,390	+32
27,000-32,999 Bhu/hr 361 181 78 259 5 33,000-41,999 Bhu/hr 363 181 78 259 5 34,000-41,999 Bhu/hr 364 - 3 35,000-64,999 Bhu/hr 364 - 3 77,000 Bhu/hr sed ever 366	No. of Cos.		Under 27,000 Bru/hr	360				
33,000-41,999 Bhu/hh 363 181 78 259 43,000-51,999 Bhu/hh 363 83 84 84,000-51,999 Bhu/hh 364 85,000-64,999 Bhu/hh 365 7,000 Bh	1960-5		27.000-32.999 Bru/hr	-8	,			
42,000-53,999 Bhu/hr 543	1959-8		33,000-41,999 Btu/hr	562	181	78 }	259 \$	-752
\$4,000-44,999 Bhu/hr \$64 45,000-96,999 Bhu/hr \$65 97,000 Bhu/hr and over \$66	REFRICERATIO	=	42,000-53,999 Btu/hr	563				
45,000.96,999 Bru/hr 565	CHASSIS		\$4,000-64,999 Btu/hr	364	,			
000 Bru/hr and over 566 -	(3)		45,000.96,999 Bru/hr	365		-		
The second second second			97 000 Ros/he and avec	777	-	,		

No. of Cos. Linear 21,000 Bin/hr 299 178 2,775 2,955 -673 190 - 670 190				_				
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1956-6 2000-21999 Bhunhr 591		1.	Under 27,000 Btu/hr	290		_		17.77
RELEACONTRIBED SLADDS-11/297 Branch STATE 1787 2,773 2,951			27 AAA. 32 868 Rsu/hr	105	-			
REMOTE 2,000-31,999 Bhu/hr 594		1959-9	21 000.41 000 Rou./hr	500		-		-
CONTINUES SLODG-64, 999 Bhu/hr 294		SELF-CONTAINE	42 000-53.999 Bru/hr	203	178	2.773	2.951	79-
TYPE			SA DOOLAA DOO BALLAN	404				
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1990-42 12,000-13,99 Bus/nr 601 445 1996		10 .	Under 47,000 Btu/ no	900	17001		1,0/1	41/1/
1959-13 32,000-64,999 Bru/hr 603 415 2,316 2,300-64,999 Bru/hr 610 2,122 2,22		1960-22	27,000-32,999 Bru/hr	60	498		498	+716%
(5) CONTAINED (2000-64,999 Bus/hr 605 415 415 415 (2000-64,999 Bus/hr 605 272 2 272 2 272 (2000-64,999 Bus/hr 605 272 2 272 2 272 (2000-64,999 Bus/hr 610 2128) 245 2 272 2 272 (2000-64,999 Bus/hr 610 2128) 245 2 272 2 272 (2000-64,999 Bus/hr 610 2128) 245 2 2438 (2000-64,999 Bus/hr 610 2128) 245 2 273 (2000-64,999 Bus/hr 610 2128) 245 2 2438 (2000-64,999 Bus/hr 610 2128) 245 2 273 (2000-64,999 Bus/hr 610 2128) 245 (2000-64,999 Bus/hr 610		1959-13	33,000-41,999 Btu/hr	602	2,316		2,316	+20%
(5) 1900 Bunkhr 100 Bu		CS1 B.	42,000-53,999 Bru/hr	603	415		415	+188%
(5) 97,000 Bur/hr and avea 606 272 272 772 700 Bur/hr and avea 606 272 712 700 Bur/hr and avea 606 7112 700 Bur/hr and avea 610 7112 700 Bur/hr and avea 611 218 7100 Bur/hr and avea 612 712 700 Bur/hr and avea 612 712 700 Bur/hr and avea 612 712 700 Bur/hr and avea 614 712 700 Bur/hr and avea 615 712 700 Bur/hr and avea 616 712 700 741 700 Bur/hr and avea 618 700 700 700 Bur/hr and avea 618 700 700 700 Bur/hr and avea 618 700 700 Fur/hr and avea 618 700 Fur/	(8)	COMPANIED.	54,000-64,999 Bru/hr	909				
(5) 97,000 Burkhr and over 640 5,172 - 5,172 - 5,172 1996-19	-	2001	45,000-96,999 Bru/ler	809	272		272	+80%
No. of Cos Under 17,000 Bun/hr 610 5,172	-101	(5)	97,000 Btu/hr and over	909				
1969-9 27,000 Bushin 410 218 218	Pun		TOTAL	407	5.172	1	5.172	+40%
1996-19 1996	10-1	No. of Cos.	Under 27,000 Btu/hr	610				
CONTACT 13,000-11,079 Bus/hr 141 145 1	-	1960-19	27,000-32,999 Bru/hr	611	2187		218	295-
Selicity	-	1939-9	33.006.41.999 Be./hr	612	575		373	
Selection Statement Stat		-	42.000-53.999 Bru/le	613	363		367	4974/
CONFICION SECTION 1979 Bur/hr S13 451	şda	TANK I	\$4.000-64.999 Bru/hr	414	810		819	1010
No. of Con. 1960-50	-	SELF.	45 000.64 666 Bo. As		461		461	4.99.66
No. of Cos. Under 27 OTAL 677 2, 4,38 9-4 2, 4,38 1959-44 1959-44 13,000-13,999 Bus/hr 620 2, 816 99 4 2,930 1959-44 13,000-13,199 Bus/hr 627 12,101 544 12,645 13,105 13,000-13,199 Bus/hr 627 12,101 544 12,645 13,105 13,000-13,199 Bus/hr 627 12,101 544 12,645 13,105 13,000-13,199 Bus/hr 627 2,590 166 5,231 13,000-13,199 Bus/hr 627 2,590 166 5,390 166 5,318 13,000-13,199 Bus/hr 627 2,590 166 1 34,337 13,000-13,199 Bus/hr 627 2,590 Bus/hr 627	*)	(6)	97.000 Btu/hr and aver	Y	36		36	4440%
No. of Cos. Under 27.000 Bu/hr 620 2.856 94 2.930 19506-50 19506-30 27.000 Bu/hr 621 3.289 227 3.316 19506-50 27.000 32.999 Bu/hr 622 3.209 3.40 12.645 19506-10 23.000-10.999 Bu/hr 622 2.90 166 2.822 19506-10 23.000-10.999 Bu/hr 622 2.90 166 2.675 19506-10 23.999 Bu/hr 622 2.90 166 2.675 19500-10.4999 Bu/hr 622 2.90 166 2.675 19500-10.4999 Bu/hr 623 2.90 166 2.655 1950-20 23.000-10.4999 Bu/hr 632 2.656 1.681 34.337 1960-60 23.000 Bu/hr 632 2.656 1.681 34.337 1960-60 23.000 Bu/hr 632 2.656 1.681 3.4337 1960-60 23.000 Bu/hr 632 2.656 1.681 3.4337 1960-60 23.000 Bu/hr 632 2.656 1.681 1.257 1960-60 23.000 Bu/hr 632 2.656 1.681 1.472 1960-60 23.000 Bu/hr 632 2.656 1.681 1.472 1960-60 23.000 Bu/hr 632 2.656 1.681 1.257 1960-60 23.000 Bu/hr 632 2.656 1.681 1.876 1960-60 23.000 Bu/hr 642 2.656 1.681 1.876 1960-60 23.990 Bu/hr 643 2.666 2.656 2.6		/ - \	1704		00 7 6		00 7 6	107.6
1950 - 50 1959 - 44 21 20 21 20 21 20 21 20 21 20 21 20 21 20 21 20 21 20 21 20 20	Γ	No of Con	TO SEE BY A		9		6.430	7447
1999-44 4 2000-24, Part Burker 622 12,101 544 12,545 518 COMDITIONING 54,000-54, Part Burker 622 4,592 4,6 5,318 54,000-54, Part Burker 622 5,592 390 6,282		1960-50	Under 27,000 070/RF	020	2,836	27	2,930	+127
COMBITIONING \$1,000-14,199 Bur/hr 632 \$4,902 \$416 \$5,318 Bur/hr 632 \$4,902 \$416 \$5,318 Bur/hr 632 \$4,902 \$416 \$2,822 \$417 \$416 \$2,822 \$417 \$416 \$2,822 \$417 \$417 \$416 \$417 \$417 \$417 \$417 \$417 \$417 \$417 \$417		1959-44	22,000-32,777 010/01	170	2000	110	20000	2000
COMBETTIONING COMBETTIONING CONDITIONING		AIR.	43 000 41,799 Dru/hr	770	12,101	244	12,043	4717
(7) UNITY STATES BUTCHER 622 6.509 150 0.010 130 0.010 1		CONDITIONING	64 000 44 000 Ra. A.	494	5 000 E	0000	21240	7071
(7) 135.000-184.999 Bus/ne 627 301 - 3 312} 10. Of Cos		COMDENSING	34,000 04,779 BFL/RV	670	2,892	390	207.0	+2/L
(7) 135,000 134,799 814/74 627 30.1 3.1 31.2 11.8 15.00 15.0		UMITS	93,000-76,7979 DFB/76	9	6,209	700	2,0/3	+13%
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No. of Coa. 1060-40 1066-21,000 Bus/ne 1959-27 21,000-21,999 Bus/ne 20,000-21,999 Bus/ne 2			185 000 Btu/hr and aver	496	2004		317	77.7
No OE Cos Linear 27,000 But/hr 630 Factor 251 1960-60 27,000 But/hr 631 Factor 251 1540-60 27,000 But/hr 631 Factor 251 1472 2500-21999 But/hr 631 632			404	430		1 681	26. 37	7189
1960-40 27000-217,000-21899 Bus/hr 633 634 6		No. of Cos.	11-4- 00 000 Ba. A.	1		DELINE DELINE	25.1	4569
1959-27 32,000-41,929 Bus/hr 633 41,472		1960-40	M /010 000 // mon or out at	050		Name and Associated to the Party of the Part	453	200
AIR. \$2,000-41 PP Blucker 633 April 1, 283 4 4 COULS, \$4,000-644 PP Blucker 633 April 1, 287 4 1, 287 4 4 1, 287 4 4 1, 287 4 1, 287 4 4 1, 287 4 4 1, 287 4 4 1, 287 4 4 1, 287 4 4 1, 287 4 1, 287 4 4 1, 287 4 4 1, 287	CM	1959-27	27,000-32,999 Bfu/hr	631			265	+1 28
CONDITIONING 5.1006.44.999 Bus/hr 8.1007.85.999 Bus/hr (8) 133.000.84.999 Bus/hr (8) 133.000.84.999 Bus/hr 1960-41 1960-42 1960-42 1960-42 1960-42 1960-42 1960-42 1960-43	21	AIR.	33,000-41,999 Bhv/hr	632			1.472	+19%
COLLS M. COLLS	619	CONDITIONING	4:,000-33,999 Blu/ne	633			1,928	+2092
BLOWER PLANCE 133,000-134,999 Bas/Ar 643 153,000-134,999 Bas/Ar 643 153,000-134		COILS	54,000-64,999 Btu/hr	034		A STANDARD	1.267	-147
(8) 133,000-184,999 Bu/hr 630 arg 13,000 Bu/hr 6412 13,000-13,999 Bu	ın	WITH	65,000-76,799 B1u/hr	2			1,324	-232
Markin and owner (38) TOTAL (28) Barbin (38) TOTAL (28) Barbin (41) 2,899 Barbin (42) 2,899 Barbin (43) 2,899 Barbin (44) 2,899 Barbin (44) 2,899 Barbin (44) 3,899 Barbin (44) 4,276 4,	45	BLOWER	97,000-134,999 Btu/ly	939		The Arthur	913	
707-At 200 Bru/hr 640 2.431 2.	Т	(9)	135,000-184,999 8ep/ler	à		Management of the state of the	417	+35%
000 Bu./hr 640			TOTAL	620 A30			7 837	4504
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1.979 Blucker 64.3 5,237		1960-41	Under 27,000 Brushy	640			2,431	+23%
3.999 Bucher 643 (47) (47) (47) (47) (47) (47) (47) (47)		1959-27	27,000-32,999 Bitu/re	941			1,8/0	4147
2013 2.570 Burder ded 2.570		AIR.	33,000-41,999 Bru/hr	7 0			2,000	4107
25.509 Bucker 645 2013 2013 2013 2013 2013 2013 2013 2013		COMDITIONING	44,000-33,777 Sto/M	043			2,437	435%
18. 599 Buche 645 201 201 201 101 101 101 101 101 101 101		CORS	24,000-04,999 Bru/hr				6,270	****
18.5.099 Bucher 647 Control of the C		TUCHTIV	93,000.70,779 Bru/nr	965		THE STREET	1.978	1000
10 No. 7 to ToTAL 25.064	_	(a)	135,000-134,777 Bis/hr	1			107	4138
TOTAL 649 25,064			185,000 Btu/hr and over	949				1
The state of the s			TOTAL	649			25,064	4.70



Scottish Rite Temple, Washington, D. C. Comfortably cooled at low cost with gas-operated Ready-Power Air Conditioning. Consulting Engineer: Silver Associates. Contractor: Joines Refrigeration, Inc.

GAS-operated READY-POWER air conditioning achieves lowest known operating costs

In clubs, churches, theatres, bowling alleys, stores, factories . . . for every type of commercial and industrial air conditioning application...gas-operated Ready-Power units condition air with extremely low input per ton-hour.

All Ready-Power units average less than 13 cubic feet of natural gas per ton per hour. What's more, the total operating cost amounts to less than one

cent per ton per hour.

What makes this possible? Ready-Power air conditioning combines the unmatched fuel economy of gas with a unique variable speed operation.

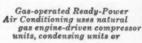
LOADMATCH CONTROLS automatically adjust output and fuel consumption to actual cooling requirements. Cooling is constant, as opposed to the ON-OFF operation of some systems.

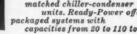
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American Gas Association



matched chiller-condenser units. Ready-Power offers packaged systems with capacities from 20 to 110 tons.







WHOLESALER NEWS

George Webster To Lead ARW Sessions

Down-to-earth discussions of sales and market analysis, inventory control, credit, customer relations, and the legal aspects of buying and selling, will highlight the business sessions of the 25th annual convention of Air-Conditioning and Refrigeration Wholesalers.

The meeting will be held Oct. 28-Nov. 2 aboard the S.S. Hanseatic cruising in the Caribbean.

George C. Webster, nationally known business management expert and consulting editor of THE REFRIGERATION & AIRCONDITIONING BUSINESS, has been named to plan and conduct these

GEORGE C. WEBSTER

comprehensive business sessions, reports ARW president William C. Miessemer.

Dr. Theodore Beckman of Ohio State University was originally assigned this responsibility, but has withdrawn for personal reasons,

In Webster, ARW has retained a man eminently qualified to help wholesalers with their business problems because he combines an outstanding academic background with successful management experience in the airconditioning and refrigeration field.

For many years he has op-

erated profitable companies at the dealer, distributor, and service level. He presently heads his own management consulting firm in Washington, D.C.

While working for his father's retail plumbing and heating firm in Washington, Webster received his B.S. degree in mechanical engineering from Maryland University in 1943. After being discharged from the Navy in 1945 he assumed a more active role in the management of his father's business. At the same time he started studying law at Georgetown University. He received his Bachelor of Law degree in 1948.

His thirst for more business management know-how led him to enroll at Harvard's graduate school of business. In 1951, after attending classes on a commuting basis, he received a Master's degree in business administration.

Still not satisfied, he continued his legal studies at Georgetown and in 1954 gained a Master's degree in business and anti-trust law. He presently is a candidate for a Ph.D. degree in business administration from American University, where he has been serving as a lecturer in the graduate course on budgeting.

He has served many large corporations as a business management consultant, and has authored many articles for the trade press and for publications of the Small Business Administration.

He is a trustee of the National Association of Wholesalers and chairman of that group's educational committee. He also is president of the Association of Management Consultants.

REGIONAL ROUND-UP

First formal meeting of newlyformed Region 10 will be held Sept. 23-24 at Rocky-Point Inn, Inlet, N.Y. Chairman Frank Continued on page 83

6 ARW MEMBERS COMPLETE NAW COURSES

Six members of Air-Conditioning & Refrigeration Wholesalers Association were among 121 recent graduates of two wholesale executive management courses. The courses, held at Ohio State University and Wharton School of Finance and Commerce, were sponsored by National Association of Wholesalers as part of a continuing program.

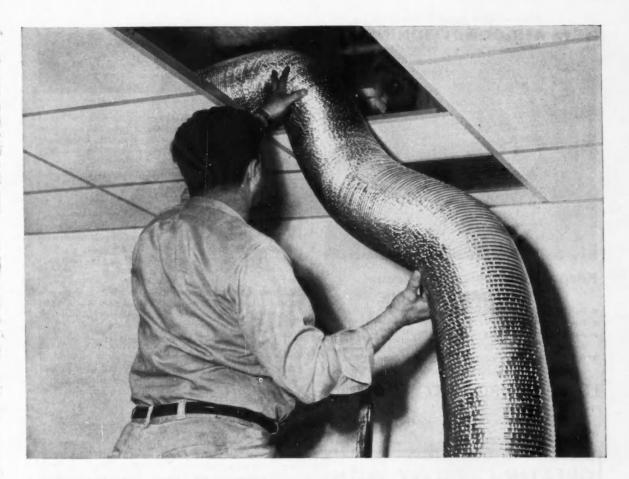


TWO GRADUATES of the executive management course at Ohio State University are (left to right) C. V. Hale, Noland Co., Inc., Newport News, Va., and Elmer K. Peterson, Thermal Supply Houston, Tex.

Subjects studied include modern leadership; human relations; wholesaler insurance; employee and salesman selection; training and supervision; work simplification; budgeting; and financing.



FOUR ARW MEMBERS completed the executive management course at Wharton School of Finance and Commerce. Seated (left to right) are John A. Hall. Salisbury, Md., and William Thomas, Baltimore, Md., both of Roche & Hull, Inc., Baltimore. Standing are Harvey J. Sharp and Edward Booth of Refrigeration Supply Co., Richmond, Va.



Lightweight, flexible **Thermaflex**® snakes around corners, through tight passages...helps you cut installation costs

No need to pre-measure, pre-fit! No need to fabricate expensive elbows, fittings!

Thermaflex is especially designed for run-outs in both highand low-pressure air conditioning systems. It's so lightweight and flexible that it easily goes around corners, over obstructions, through tight spaces . . . saves you up to 32% over rigid and nonrigid metallic duct on installation costs!

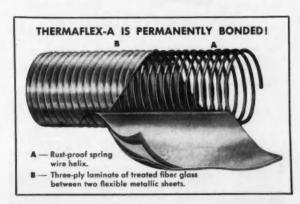
Thermaflex can be measured and cut to fit on the job. Moreover, its great flexibility and strength eliminate the need for fabricating costly elbows and fittings!

Flameproof Thermaflex reduces vibration, noise... offers superior air flow efficiency. Unlike other nonrigid ducts, it's permanently bonded to wire reinforcement. Thermaflex materials are approved by Underwriters' Laboratories.

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leading manufacturer of nonmetallic duct. Write today for free new Thermaflex Literature and name of authorized Thermaflex representative nearest you.



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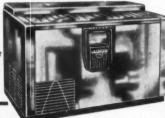
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SELF CONTAINED ELECTRIC COMPLETE

The La Crosse "BLUEBIRD" BOTTLE COOLER is the ideal cooler wherever food or drink is served.

Special "low counter" design (331/2" high) . . . available in stainless steel or grey hammertone baked enamel finish . . . top capacity . . . and sound La Crosse engineering throughout.

JODZ LOSEY BOULEVARD SOUTH, LA CROSSE, WISCONSIN

EXPORT OFFICE: 60 EAST 42nd STREET, NEW YORK • CABLE: EXPEDITE Circle No. 38 on Reader Service Card

USEFUL Literature

A COMPREHENSIVE CATALOG covers the complete line of Recold Corp.'s "Dricon" condensers, featuring the upblast model for outdoor roof applications. Contains detailed explanation of sizing these condensers for multi-circuit jobs, plus data on use of Dricon units as jacket water coolers.

Circle No. 181 on Reader Service Card

YOUR COPY of Bulletin 260 published by Lidseen of North Carolina, Inc. contains descriptions and photos of "Chicago" benders. Subjects discussed include calculating lengths of legs, locating bends, back-to-back method, back-to-back push through method, and offset bends.

Circle No. 182 on Reader Service Card

HEATING AND COOLING COILS are elaborated upon in a booklet (Data M10) published by Dean Products, Inc. The coils can be adapted for such varied uses as on bottom tank heaters, steam pans, drip pans, and hoppers.

Circle No. 183 on Reader Service Card

EVAPORATIVE CONDENSERS from 10 to 700 tons are covered in Bulletin 107 published by Baltimore Aircoil Co., Inc. Information on these single, factory-assembled units includes engineering drawings, capacity and performance data, selection tables, product photos and descriptions for blow-thru, draw-thru, centrifugal-fan, and tubeaxial-fan models.

Circle No. 184 on Reader Service Card

TWO DRIVE SELECTION charts are included in Catalog SL-1 published by Maurey Mfg. Corp. for its line of spring loaded pulleys and adjustable motor bases. Specifications and engineering data accompany product photos and descriptions.

Circle No. 185 on Reader Service Card

PHOTOS AND DESCRIPTIONS of the complete line of products available from industrial division, American-Standard are contained in the company's Bulletin B-5529. This 24-page booklet gives basic ratings for airconditioning and air handling equipment, fluid drives, heat exchangers, surface condensers, and steel boilers. Each product is illustrated.

Circle No. 186 on Reader Service Card

PIPE INSULATION is the subject of a booklet published by Presstite Div., American-Marietta Co. This insulation, named "Presst-O-Cel," is a cellular tube and pipe insulation made of expanded neoprene and filled with inert nitrogen. Service temperature range is from -40 to 160 F. It has a K factor of .30 at 120 F and a density of about eight lb. per cubic foot. Also has an average water absorption of less than 2% by volume. Is non-flammable.

Circle No. 187 on Reader Service Card

SELECTION, APPLICATION, AND BUYING GUIDE for "Tri-Clad '55" motors of General Electric Co. are discussed in the color Bulletin GEC-1049. These induction motors, both single- and three-phase, are from % to 150 hp. Selection factors are determination of power supply, motor type, enclosure, hp rating, and motor speed. Applications included are for compressors, conveyors, fans and blowers, and pumps.

Circle No. 188 on Reader Service Card

A FEW TIPS are offered on selecting a uniform in a new booklet offered by Institute of Industrial Launderers. "Selecting A Uniform?" gives suggestions on the use of the correct uniform for particular jobs. It presents general rules for selection of uniforms to guide company executives seeking advise.

Circle No. 189 on Reader Service Card

HOW TO SELECT and test motor capacitors is one feature of a catalog published by the distributor division of P. R. Mallory & Co. Inc. It contains complete listings of dry electrolytic ac motor capacitors and oil-impregnated ac continuous duty capacitors. Another feature is a replacement cross reference listing.

Circle No. 190 on Reader Service Card

SIX BASIC TYPES of centrifugal and turbine pumps are shown in a pamphlet issued by Aurora Pump Div., New York Air Brake Co. These types are turbine, multi-stage, double suction, semi-enclosed, non-clog, and single suction. Capacities range from 1 to 9000 gpm, heads to 600 feet, with pressures to 400 psi. Pumps include the turbine, non-clog, split case, sump, end suction, and condensate return units.

Circle No. 191 on Reader Service Card

SEVERAL PRECAUTIONS against trouble are outlined in a booklet on explosion-proof refrigerators for industry by Kelmore Service, Inc. Differences between conventional and explosion-proof units are explained. Includes a list of flammable or explosive materials.

Circle No. 192 on Reader Service Card

REFRIGERATION REPAIRMEN will be interested in a complete replacement chart for automatic defrost controls published by Paragon Electric Co. Lists manufacturer stock numbers of refrigerators with timers. Bulletin X-TD-295 itemizes cam, pin, pressure, and other replacement information on each Paragon device to the applicable unit or on Paragon's "8100" series of controls.

Circle No. 193 on Reader Service Card

THE WHYS OF MOTOR CONTROLS made by Arrow-Hart & Hegeman Electric Co. are defined in a folder issued by that firm. Aimed principally at design starters and contactors, the folder provides technical and design features of the "Type RA" control, in NEMA sizes 0 through 5. There are descriptions of the control's arc chambers, solderless terminals, auxiliary contacts, and overload relays.

Circle No. 194 on Reader Service Card

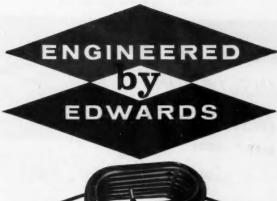
TEMPERATURE CONTROLS of the "Dual Mite" line are featured in a pamphlet published by Thermal Engineering & Design Co. The controls are for electric baseboard heaters, room heating devices, and appliances. The booklet describes and lists models, AC ratings, and calibration ranges.

Circle No. 195 on Reader Service

INVENTORY CONTROL provided economically and efficiently is the subject of a Case History 1246 published by Remington Rand Div., Sperry Rand Corp. This particular literature describes how one plumbing, heating, and airconditioning wholesaler uses Remington Rand's "Robot Kardex" to combine mechanized filing with proven record-keeping in the control of stocking and ordering of popular or slow-moving items numbering in total over 13,000.

Circle No. 196 on Reader Service Card

(More Useful Literature on page 64)





COAXIAL CONDENSERS

Domestic and sea water models
Reduce costs 40% ... Reduce condenser water
35% ... Reduce refrigerant charge ... Stabilize capillary performance ... Compact shapes.



AIRVEC

The completely silent Air Cooled Condenser

Never needs cleaning



MOTORIZED VALVES

For chilled water cooling systems and for heating systems . . . 100% positive shut-off . . . Compact . . . Low cost . . . Low Voltage . . . No current draw when open.



EDWARDS ENGINEERING CORP.

1043 ALEXANDER AVENUE POMPTON PLAINS, NEW JERSEY TEmple 5-2808

"One of the nation's largest manufacturers of Residential and Commercial Boilers, Baseboard and Steel-Fin Radiation, Motorized Valves, Air and Water-Cooled Refrigerant Condensers."

Circle No. 25 on Reader Service Card





BACHARACH INDUSTRIAL INSTRUMENT CO. 200 N. BRADDOCK AVE. . PITTSBURGH 8, PA. RUSH details on FLORET Air Velocity Indicator to

	•
NAME	
COMPANY	
STREET ADDRES	\$

Circle No. 15 on Reader Service Card

USEFUL LITERATURE

Continued from page 63

LOW TEMPERATURE APPLICATIONS of commercial refrigeration and airconditioning equipment, such as cold storage units, aided by Vilter Mfg. Co.'s line of air defrost freezers, are described in a new booklet. Lists information on eight sizes of freezers, ranging from 6300 cfm to 36,000 cfm, including vertical and horizontal air discharge models.

Circle No. 197 on Reader Service Card

ECCENTRIC VALVES are described in DeZurik Corp.'s Bulletin 110. This literature lists the product's materials, pressure ratings, dimensions, and accessories. Available in nearly any castable material, the valve features a leakproof stem seal, resilient plug facing, high nickel alloy seat, and tight shutoff. Sizes are from % to 5" and larger.

Circle No. 198 on Reader Service Card

FLEXIBLE AIR DUCTING for air conditioning and industrial ventilating is discussed and illustrated in a new brochure (622) issued by Wiremold Co. The pamphlet discusses duct types, specifications, possible applications, engineering features, and sample duct installations.

Circle No. 199 on Reader Service Card

LOW TEMPERATURE PIPE INSULATION molded of polyurethane foam is the solution to insulation problems for service between absolute zero and 250 F. The insulation is produced by Baldwin-Ehret-Hill, Inc., and is the subject of the firm's booklet on "Gemfil." Included in the brochure are illustrated application instructions, suggested specifica-tions, and a table of recommended thicknesses for various temperatures.

Circle No. 200 on Reader Service Card

YOU'LL FIND COMPLETE ratings of induced draft cooling towers in a bulletin issued by American Air Filter Co., Inc. Bulletin KT-104 describes the "Kennard/Nelson" line. Explains construction, specifications, and performance details for these towers which use a centrifugal-type fan. Unit dimensions are diagrammed.

Circle No. 201 on Reader Service Card

AIRCONDITIONING PRODUCTS LIST is the primary concern of Catalog GC-1259A issued by Bell & Gossett Co. Each of the item categories includes illustrations and technical data. Among the products featured are the following: water heaters, coolers, pumps, valves, control units and other home heating and cooling components.

Circle No. 202 on Reader Service Card

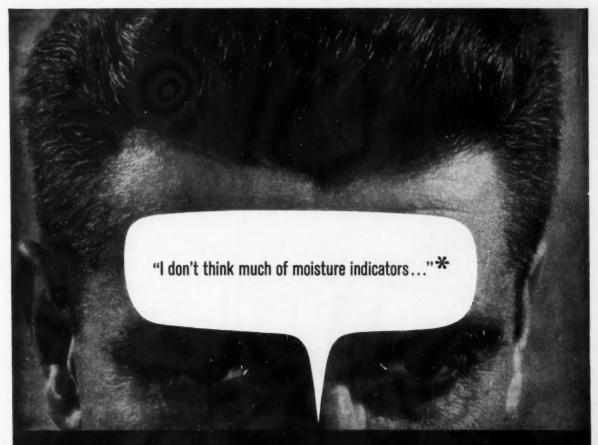
REFRIGERANT CONDENSERS are explained in a booklet issued by Marley Co. on its Series B line of "Dri-Coolers." Describes 23 models in the 10- to 125-ton field. Gives details on forced draft design, air-cooled fluid cooling, and specifications for uses with various types of refrigerants. Capacity specifications are also included.

Circle No. 203 on Reader Service Card

MANY BONUS FEATURES are in the horizontal forced warm air furnace discussed in a brochure published by Janitrol Heating & Air Conditioning Div., Midland-Ross Corp. This furnace, Model FHS, features a V-belt drive, factory fire testing, and use with either LP or city gas. Also convertible for summer use.

Circle No. 204 on Reader Service Card

CITY & STATE



**PERHAPS THAT'S BECAUSE YOU HAVEN'T TRIED ANSUL'S BRAND NEW "200" DRY-EYE, SIR! In this unique refrigeration service aid, the Refrigerant-12 indicator, the Refrigerant-22 element and the sight glass are combined in one unit which screws out easily, in one piece, to permit worry-free soldering of sweat connections. No jig-saw puzzles to put together when you have to remove the core of the unit . . . no possible way of damaging the elements during installation. I Most moisture indicators are notoriously inaccurate in showing the moisture content of Refrigerant 22. Refrigerants vary markedly in their moisture characteristics and an R-12 indicator just won't do the job on 22. However, the "200" Dry-Eye has a separate, true Refrigerant-22 indicator—painstakingly designed to show scientifically the moisture content that signals danger in R-22 systems. I "200" Dry-Eyes are available in all standard sizes, flare and sweat, in both the in-line models (L-200) and the popular T models (T-200). This latter, when attached to the Ansul T-Flo Drier, provides a complete moisture control system. See them now at your refrigeration wholesalers' or write directly to the Ansul Chemical Company for additional information.





ANSUL CHEMICAL COMPANY MARINETTE, WISCONSIN FIRE EXTINGUISHING EQUIPMENT REFRIGERATION PRODUCTS INDUSTRIAL CHEMICALS

NEW Products

Roof-mounted Units

Product: Roof-mounted heating and cooling units.

Manufacturer: Typhoon Air Conditioning Co. Div., Hupp Corp., Brooklyn, N.Y.

Features: Two low silhouette combination air-cooled airconditioner and gas-fired heater packages for roof mounting. Only 43" high, they have



cooling capacities of 8 or 10 tons and heating capacities of 160,000 or 240,000 Btuh. Units consist of the heating and cooling system in one package and a separate air-cooled condenser which may be mounted remotely and is cooled by a vertical discharge propeller fan. With condenser adjacent, total assembly is about 5 x 18'.

Circle No. 106 on Reader Service Card

Food Case

Product: Model TTC-5 twin temperature food case.

Manufacturer: Hussmann Refrigeration, Inc., St. Louis, Mo.

Features: Operates at either low temperature for frozen foods or at normal temperature for packaged fresh



perishables. Self-containing condensing unit and automatic defrost. May be shopped from all four sides. Defrost water is self-evaporating. Dimensions are 5 x 3% x 3' with a 5'' vinyl color band between double cart guards.

Circle No. 107 on Reader Service Card

Oil Refrigerant

Product: "Supco 88" improved refrigerant.

Manufacturer: Sealed Unit Parts Co., Inc., New York, N.Y.

Features: Has been injected in vapor form with all the firm's refrigerants with an added four-way charge. This latter feature, which supplements the basic oil additive, will lower running amperage due to friction control, clean system of sludges and acids while charging, and keep expansion valves and capillaries operating effi-ciently and smoothly. Comes in a onepound can.

Circle No. 108 on Reader Service Card

Hydronic Accessory Kit

Product: "Hydro-Flo Pak" kit containing hydronic components for onthe-job installations.

Manufacturer: Bell & Gossett Co., Morton Grove, Ill.

Features: Contains booster pump, airtrol system, relief or flow control



valves, compression tank, pre-engineered and precut pipe fittings. Parts will fit all types of boilers. For residential hydronic systems up to 90,000 Btuh capacity.

Circle No. 109 on Reader Service Card

Duct Thermometers

Product: Mercury actuated dial

thermometers for duct applications.

Manufacturer: Weksler Instruments Corp., Freeport, Long Island, N.Y.

Features: Standard ranges include -40/110 F, -20/110 F, 0/100 F, 30/ 150 F, 30/240 F, 100/400 F, 100/800 F. Other ranges available to meet all requirements. Can be used for duct and casing, at airconditioning units for fresh air, mixed air, supply air, hot decks and cold decks, for freezers, storage compartments, constant temperature rooms, boiler stacks.

Circle No. 110 on Reader Service Card

Expansion Valve

Product: Pressure-limiting expansion valve (Series 718)

Manufacturer: Detroit Controls Div., American Radiator & Standard Sanitary Corp., Detroit, Mich.

Features: Pressure-limiting device, comprising a spring and two retainers, replaces push rod normally found between the diaphragms of a pressure limiting valve. As suction pressure rises above maximum operating pressure of the valve, the spring com-presses and shortens the distance between diaphragms. Also will operate



as a standard thermostatic expansion valve. Available with internal or external equalizer and for use with either R-22 or R-12 refrigerant.

Circle No. 111 on Reader Service Card

New Valve Line

Product: "Gold Seal" line of six valves.

Manufacturer: Watsco, Inc., Hialeah, Fla.

Features: Valves include the following types-line tap, can tap, line port, access saddle, saddle "T" and control. Line tap valves are fastened to line from top by two head screws. Control valve has an adjustable swivel top, and includes a connecting bushing in each box. Access and saddle valves can be soldered to the line for permanent charging port.

Circle No. 112 on Reader Service Card

Air-Cooled Condensers

Product: Remote air-cooled condensers (Series "LH" & "LV").

Manufacturer: A. H. Witt Co., Inc., Los Angeles, Calif.

Features: These large capacity con-densers supplement "C" and "CB" units. Have horizontal and vertical air



discharge. Capacities from 21/2 to 60 tons based on 90 and 120 F condensing temperatures.

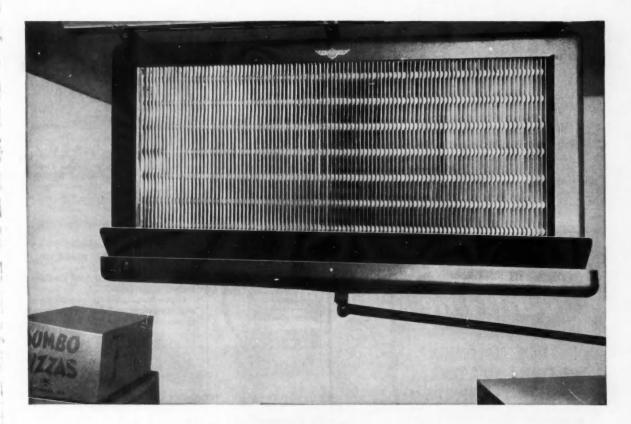
Circle No. 113 on Reader Service Card

Refrigerators and Freezers

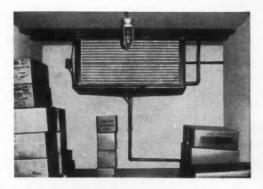
Product: "Silco" refrigerators and

Manufacturer: Silver Refrigeration Mfg. Corp., Brooklyn, N.Y.

Features: Provides up to 30% more storage space in door with door pans of one-piece dye-stamped aluminum. Circular blower coil plus hermetical-



You'll like LARKIN for zero and lower!



QUALITY FEATURES

- Minimum temperature rise during defrosting
- Adjustable defrosting time and frequency
- No excess heat or moisture load
- Lower operating costs
- Higher efficiency of evaporator unit
- Melts frost from inside out heat applied throughout entire evaporator
- Simple, low-cost installation
- Drip pan is electrically heated by a carbon impregnated, water-proof, molded pad — assures positive drainage of melting ice and water — prevents freezing
- Larkin patented Cross Fin coil staggered electro tinplated tubes
- Heavy gauge aluminum case
- Self-locking nuts; vibration-proof assembly
- Standard motors with thermal overload protection

Low initial cost, simplicity of installation, good service—these are the points that earned LARKIN Low Temperature Humi-Temps a reputation throughout the free world.

HOT-GAS DEFROST

Standard LT units, mullion units and wall units are available with LARKIN's patented Frost-O-Trol® Hot-Gas Defroster. It is simple, effective, fool-proof, completely automatic. A factory-installed metering orifice prevents slugging of refrigerant into compressor—making extra tanks, reversing valves or re-evaporators unnecessary.

ELECTRIC DEFROST

Sealed electric heaters embedded in the coil defrost by radiation, conduction and convection in the LARKIN ELT—Electric Defrost Low Temperature Humi-Temp. Top efficiency, low operating cost are assured.





no measuring - no notching

no cutting - no forming

ly-sealed refrigeration system and high impact breaker strips. Coil is 3%". Slides and shelves are interchangeable without tools. Heavy crosswires are % x 18". All models are available in stainless steel exterior and aluminum interior.

Circle No. 114 on Reader Service Card

Temperature-monitor System

Product: "Type-Z" temperaturemonitor system.

Manufacturer: Royco Instruments, Inc., Mountain View, Calif.

Features: Temperature range, from -50 to 300 F, appears on indicator

panel. It is accurate to within 1%. Plug-terminated sensor probes and mating extension cables provided, latter up to 4000'. Plugging of cables to



indicator panel permits replacement or checking of sensor probes. Operates on 115 v., 60 cps power, drawing 4 watts.

Circle No. 115 on Reader Service Card

Truck Body

Product: "Service-Master" truck body (Models SM-10, SM-15, SM-20, SM-30).

Manufacturer: McCabe-Powers Body Co., St. Louis, Mo.

Features: Changes in exterior lines and compartments. For old or new chassis in %, %, 1, and 1% tons. Model



SM-10 is 77" long, fits chassis 40-42"; SM-15 90" length fits chassis 48-54"; SM-20 and SM-30 102" long fit chassis 57-60". Aerial ladder available in two models.

Circle No. 116 on Reader Service Card

Acid Control

Product: "PH Block" control for acidity.

Manufacturer: Virginia Smelting Co., West Norfolk, Va.

Features: Maintains proper alkalin-



ity between pH7 and pH8.5 and neutralizes acidity of make-up and sump waters by eliminating acidic corrosion. Circle No. 117 on Reader Service Card

Frozen Food Case

Product: Frozen food display case (Model 21).

Manufacturer: Hussmann Refrigeration, Inc., St. Louis, Mo.

Features: Has two display decks, vertical display visibility, automatic

JARROW

identi-line

IDENTICAL REPLACEMENT

REFRIGERATOR

DOOR GASKETS

(*Except where original replacements are furnished in measured lengths only)

...available for over 1400 popular models of these 14 makes:

- . ADMIRAL . COLDSPOT . COOLERATOR . CROSLEY
- FRIGIDAIRE GENERAL ELECTRIC GIBSON HOTPOINT
 - . INTERNATIONAL HARVESTER . KELVINATOR
 - NORGE PHILCO SERVEL WESTINGHOUSE

CAN BE ORDERED BY REFRIGERATOR MODEL NO. from this

This handy pocket-size Jarrow Key Chart Booklet shows you at a glance the correct Jarrow "identi-line" replacement gasket for more than 1400 individual model numbers of 14 different makes.

Jarrow "identi-line" identical replacement door gaskets are identical to the replacement gaskets as furnished by the refrigerator manufacturer. They are both convenient and economical for the domestic refrigerator service man.

AVAILABLE AT YOUR REFRIGERATION SUPPLY WHOLESALER





ARROW PRODUCTS.

Almost a Third of a Century of Gasket Experience 1238-50 W. FULLERTON AVE., CHICAGO 14, ILL.

Circle No. 31 on Reader Service Card



compartments. Optional lighted superstructure adds 36 sq.ft, in the 8-foot case and 54 sq.ft. in the 12-foot case. Circle No. 118 on Reader Service Card

33-Ton Package Unit

Product: Hermetically-sealed packaged airconditioning unit. (Model EW400).

Manufacturer: York Div., Borg-Warner Corp., York., Pa.

Features: Produces in excess of



400,000 Btuh (33.3 tons), and will cool and dehumidify up to 15,000 cfm of air at common ductwork pressures. Both 71/2 and 10-hp fan motors available. Consists of a four-step system employing four compressors. As cooling load increases, each compressor cuts in as required, no more than one starting at one time.

Circle No. 121 on Reader Service Card

Compact Capacitors

Product: AC motor-run capacitor. Manufacturer: Aerovox Corp., New Bedford, Mass.

Features: The new line of these

Condensing Unit

Product: "LSCU" condensing unit. Manufacturer: Dunham-Bush, Inc., West Hartford, Conn.

Features: Low silhouette condensing unit ("LSCU") in five sizes, from 10 to 30 tons for use primarily with



water savers. Unit is a low silhouette blower condenser, Brunner-Metic motor-compressor, Heat-X liquid receiver, electrical controls, and refrigeration

Circle No. 119 on Reader Service Card

Filter-Drier

Product: Block-type filter-drier. Manufacturer: Alco Valve Co., St. Louis, Mo.

Features: Combines Silica Gel P.A. 400 and molecular sieve, bonded in rigid form. Combined desiccants ab-



sorb acids and colors. Full flow fittings of copper and brass minimize pressure drop through connections. Rapid rise in pressure drop prevented by filtration in depth.

Circle No. 120 on Reader Service Card



... and it costs less! Serviceman

"Super-Heat" Kit

Contains two attractive, polished brass, 21/2-inch thermometers, graduated -40° to $+65^{\circ}$ F. Also two insulating wrappers for easy bulb attach ment and to insulate bulbs from ambient temperature (vital to testing accuracy). Thermometers, wrappers and manuals compactly held in durable 3" x 8" x 1 1/4" box with handy hinged cover. Moderately priced thanks to efficient production.

Your setting of the expansion valve can be no more accurate than your reading of superheat. How do you read it?

The Marsh way is the accurate way...the lowest cost way, too, when you compare these long-lived thermometers with the breakable glass tube kind.

Instead of those hard-to-read, hard-to-use glass tube thermometers, a handsome pair of distant reading dial thermometers with small bulbs easy to attach at exactly the right place. Widely spaced markings in working area assure far greater reading accuracy than is possible with glass tube thermometers... guaranteed accurate within one division plus or minus.

Put the bulbs where they belong; the dials where they can be seen and compared...and you're "in business." Manual in every kit tells how to get best results. Write for facts or

See Your Wholesaler

MARSH INSTRUMENT CO., Dept. P. Skokle, III.

Division of Colorado Oil and Gas Corporation & Valve Co., (Canada) Ltd., 8407 103rd St., Edmo Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Tex

Circle No. 42 on Reader Service Card



capacitors affords a height reduction of almost 15% without sacrifice of per-

formance or life. These compact capacitors are in voltage ratings of 236, 370, 440, and 660 VAC. Hermeticallysealed, double-blade universal terminals, one-piece dual-cup bushings, and an anti-rust and anti-corrosive finish.

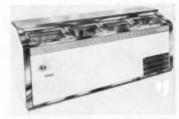
Circle No. 122 on Reader Service Card

Ice Cream Cooler

Product: Redesigned ice cream coolers (GCT-72, GCT-96).

Manufacturer: Savage Ice Cream Cabinet Div., C. V. Hill & Co., Inc., Trenton, N.J.

Features: Two new models, in sixand eight-foot lengths, have slide-up



glass doors whose frames are of lightweight extruded aluminum. A color trim attracts attention. Stainless steel base rail for protection from shoppers' carts. The new line's door height enables children to help them-

Circle No. 123 on Reader Service Card

COMBINATION MAGNETIC HEX WRENCH AND PHILLIPS TYPE SCREWDRIVER SET

At Last! A hex wrench long enough (9") to reach most remote set screwseven the almost inaccessible screws found in the hub of fans and blowers.





PART NO. P-13



This set includes 6 nine inch long straight length hex wrenches in sizes ranging from 3/32" to 1/4"

Each wrench is magnetized to enable the user to easily recover fallen set screws. To facilitate the use of these wrenches a master handle with corresponding size openings, is included in each set. This handle is designed to slide to any position on the wrench thus enabling the user to keep as close to the work as is desireable. As an extra feature this fine set includes 3 Phillips type screwdriver tips, sizes #1 #2 #3 each of which snaps onto the end of the 1/4" size wrench.

Packed in a hinged steel box, the hex wrenches are made of hardened chrome vanadium steel. The Phillips type screwdriver tips are hardened steel. All the components of this set are finished to resist corrosion.

For additional information see your Wholesaler or write to Dept. B-9.



Circle No. 72 on Reader Service Card

Room Thermostats

Product: Room thermostats (Series RT").

Manufacturer: Grayson Controls Div., Robertshaw-Fulton Controls Co., Long Beach, Calif.

Features: Sealed-in magnetic switch does not require leveling. Switch re-



sists vibration by maintaining contact pressure to snap point. Models for heating, cooling, or combination of the two. Heat anticipator available on all models.

Circle No. 124 on Reader Service Card

Saddle Fittings

Product: Pre-shaped saddle fittings in 45 degree angles

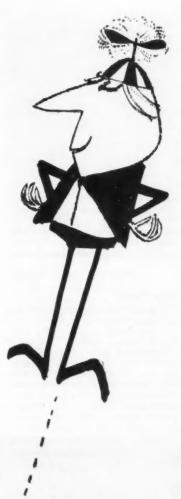
Manufacturer: Allied Piping Prod-

ucts Co., Inc., Salem, Ohio.

Features: Made of high strength

seamless tubing in three weight schedules, fittings come in A-53 for most piping requirements and A-106 (Grade B) for higher pressure applications. Sizes from 1 through 12" for





They said it couldn't be done... but Calgon® did it

-made a powdered acid that is Economical - Safe - Effective

Yes, where economy is the prime consideration when you are cleaning scale from a cooling water system, don't accept one without the other two. Calgon Condenser Cleaner has all three—it's safe, it's economical and it's effective!

Calgon Condenser Cleaner is one of the Quality Calgon Products available from your Refrigeration Wholesaler. Ask about all of them.

For free booklet on how to solve water problems, write:

CALGON COMPANY HAGAN BUILDING, PITTSBURGH 30, PA.



DIVISION OF HAGAN
CHEMICALS & CONTROLS, INC.
Circle No. 19 on Reader Service Card

welding and 1 through 4" for threaded filling. All beveled for welding. Special fittings 1 through 36" in aluminum, alloy, or stainless steel available in any desired angle.

Circle No. 125 on Reader Service Card

Replacement Controls

Product: Airconditioning and refrigeration A30 replacement controls. **Manufacturer:** Ranco Inc., Columbus, Ohio.

Features: Replacements include 23 basic controls—six for household refrigeration, four for water and bev-



erage coolers, 10 for freezers, and three for airconditioners. Control mounting bracket fits almost any application. Dial shaft extensions in variable lengths.

Circle No. 126 on Reader Service Card

Water Fountain

Product: Wall-mounted water fountain (No. WF-4000).

Manufacturer: Temprite Products Corp., Birmingham, Mich.

Features: Auxiliary wall fountain can serve as an extra cool water outlet in active areas or wall-mounted in



a separate room opposite the selfcontained cooler. Ideally suited for children, it may be adjusted to any height. The stainless steel basin top is 12" square and total height of the complete unit is 11%".

Circle No. 127 on Reader Service Card

Fan-Coil Airconditioner

Product: Fan-coil airconditioner.

Manufacturer: Modine Mfg. Co.,
Racine, Wis.

Features: Use at floor level or with low windows. Has two small-diameter pipes and condensate drain. Multi-

NOW

competitively priced!

NEW

Aeromaster
INDUSTRIAL COOLING

FAN



Blades can be installed after hub is mounted on drive shaft

Performance, construction, and price make this the "best buy" in industrial fans! Delivers more CFM with less H.P. Features a ductile iron hub, removable blade retention caps, heat treated aluminum alloy blades with constant chord width and flanged ends. 4, 6 and 8 bladed fans available in 54" to 120" diameters. Maximum tip speed is 15,000 ft./min. Easy to install . . . easy to maintain. For complete details, write: KOPPERS COMPANY, INC., 5009 Scott Street, Baltimore 3, Md.



Aeromaster Fans

Engineered Products Sold with Service Circle No. 36 on Reader Service Card

Hermetic

Dryers

- One piece copper construction
- Filled with PA-400 Silica Gel
- Complete acid removal
- Cap-tube connections
- OD solder to 1/2 in.
- Double sealed to insure dryness
- Capacities from I cu. in. to 30 cu. in.

Hermetic

Strainers



- Wide range of monel screen sizes .
- One piece copper shell
- Cap-tube connections Solder connections to 1/4 ODS
- Ideal for liquid and suction lines
- Screen areas from 1% sq. in. to 25 sq. in.

PERFECT FOR SERVICING, REBUILDING MANUFACTURING

Vestern Ave., Chicago II, III. EXPORT DEPT. 13 E. 40th St., New York 16, N. Y.



speed motor control and leak-proof coils. Four units in range of 200-600 cfm and from 14,300 to 44,900 Btuh. Has individual room control.

Circle No. 128 on Reader Service Card

Field Fabrication Kit

Product: Field fabrication kit for airconditioners.

Manufacturer: Research Products

Corp., Madison, Wis.

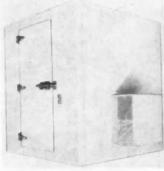
Features: For fabrication of "E Z Kleen" air filters in % and 1" applications. Stocking of eight-foot channel stock and filter media (32 x 40") required. Tools recommended for kit, frame notcher, frame crimper, frame roller, punch, rivets, and rivet pliers. Circle No. 129 on Reader Service Card

Walk-In Cooler

Product: Walk-in coolers and freez-

Manufacturer: Nor-Lake, Inc., Hudson, Wis.

Features: Temperature panels in



sizes from % to 2 hp for freezers from % to 2 hp, with hot gas defrosting. Thicknesses range from 4 to 10". Redesigned compressor sections and plug-in panel systems.

Circle No. 130 on Reader Service Card

Heat Pump

Product: Heat pump for residential and light commercial market,

Manufacturer: Day & Night Mfg. Co., La Puente, Calif.

Features: Available in 2 and 3 hp units. Accessory strip heater packages for extra heating capacity in low winter temperatures areas are optional. Contains dual thermal expansion and check valves for refrigerant control; process valves for checking and servic-

> Prof. Know How CORNER

AIRSERCO PRODUCT

OF THE MONTH



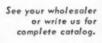
...will quickly solve your servicing and production problems in Air Conditioning and Refrigeration.

Portable

Charging Station with High Vacuum Pump

Choose "THE STANDARD OF THE INDUSTRY" in Air Conditioning and Refrigeration . . .

- TESTING INSTRUMENTS
- PRECISION VISUAL MEASURING EQUIPMENT
- HIGH VACUUM PUMPS, GAUGES, AND ACCES-SORIES









KC-3R High Vacuum Pur with Smoke Arrestor Hermetic Cap-Start Cap-Run Test Cord



For Automotive & Field Service FOR ALL REFRIGERANTS Request Bulletin No. 40850

5 lb. Portable

Charging Cylinder

"AIRSERCO . . . creative leader of the industry since 1933."

AIRSERCO MANUFACTURING CO.

PITTSBURGH 13, PENNSYLVANIA, U.S.A.

Airserco has built more refrigeration testing equipment than any other company in the world.

Unit

Circle No. 2 on Reader Service Card

SEPTEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS



ing operations, and 2-speed inside blower motor for choice of air volume. A high pressure limit control helps prevent system overloading. Compressor hermetically sealed with thermal and overload protective devices.

Circle No. 131 on Reader Service Card

Winter Airconditioners

Product: Gas- and oil-fired winter airconditioners.

Manufacturer: Mueller Climatrol Div., Worthington Corp., Milwaukee, Wis.

Features: Models available in six capacities, from 100,000 to 250,000 Btu input. Optional features include electronic air cleaner, clogged filter indicators, automatic humidifier, variable air flow blower.

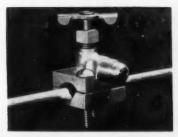
Circle No. 132 on Reader Service Card

Access Valve

Product: "Tapzall" line-piercing ac-

Manufacturer: Superior Valve & Fittings Co., Pittsburgh, Pa.

Features: A permanent access valve on hermetic units, is in sizes from



3/16 through 5/8". Straddles the tubing and tightens by screws with a key-type handwheel for installation from the top.

Circle No. 133 on Reader Service Card

Insulating Fill

Product: "Perlox" low-density insulating fill.

Manufacturer: Johns-Manville Corp., New York, N.Y.

Features: For use with low temperature liquified gases. Formed from expanded silica aggregate and offers Circle No. 21 on Reader Service Card

NAIL EVERY SALE

With Coldin's limitless line of types and sizes of quality commercial refrigerators, every prospect can be converted into a profitable customer. Franchises available. Send for literature and catalog.



COLDIN CABINET CO., Inc. 2800 Webster Ave., N. Y. 58, N. Y.



maximum thermal resistance. Completely safe for majority of cryogenic applications, including insulating liquid oxygen and liquid hydrogen. Has a density of 3 lb. per sq.ft., with temperature limits from -450 to plus 1400 F.

Circle No. 134 on Reader Service Card

Low Horsepower Starter

Product: NEMA Size 00 starter. Manufacturer: Square D Co., Milwaukee, Wis.

face area. Filter media composed of

non-woven batt. Resistances of .1" wg at 350 fpm and .15" wg at 520 fpm. Up to 1000 cfm at 350 fpm and ca-

pacities of up to 1500 cfm at 520 wg.

Circle No. 135 on Reader Service Card

Features: For low-hp jobs. Rated from % hp 110 v. to 2 hp 440/550 v. for 3-phase service. Dimensions are 3-13/16 x 5-3/13 x 3-45/64. The open device has straight-through wir-



ing, pressure wire terminals, molded coil, and 1-piece melting alloy overload relays. Available in either open or NEMA Type 1 enclosure with optional pushbutton or selector switch in the cover, or without overload relays.

Circle No. 136 on Reader Service Card

Air Filter

Product: "Pure-Air" air filter.

Manufacturer: Arco Mfg. Corp.,
New York, N.Y.

Features: 2" deep pleat pockets set on 14" centers. Ratio of 4-1 of free-



WHATEVER YOUR LOW-TEMPERATURE INSULATION NEEDS UNITED CAN SERVE YOU

From engineering design to final installation in CORKBOARD or EXPANDED POLYSTYRENE

United's patented process BB Corkboard is the long established, job tested insulation material. Block baked of 100% cork with no fillers or binders, it has a low K factor, is fire retardant, insect and vermin resistant.

Equally effective is Uni-Crest expanded polystyrene, United's newest development in insulation materials. This modern, lightweight, snowy white material, composed of minute, individually closed cells, has a low K factor, low moisture absorption, and retains its insulating value indefinitely. It is strong, flexible, easy to handle and inexpensive.

Experienced engineers, at United's branch offices coast-to-coast, offer complete consulting and design ser-

vice on both cork and Uni-Crest installations. Each installation is specifically planned to meet requirements of the job. Skilled crews, working out of these same offices, carry out the entire job of erecting insulation under direct supervision of engineers responsible for the design. In this way you are assured of undivided responsibility for performance of the entire installation.

Both Cork and Uni-Crest are available in a wide variety of sizes in board and pipe covering form. In addition, United provides cork lagging and discs for tank and filter application, as well as a self-extinguishing board and pipe covering of Uni-Crest. Write for more complete information.

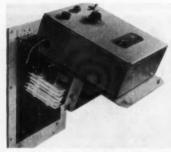
UNI-CREST

Negative Ion Generator

Product: Duct-type negative ion generator.

Manufacturer: Vita-Aire Process Co., Inc., Milwaukee, Wis.

Features: Uses ultra-violet rays to produce negatively ionized air which oxidizes and destroys air impurities.



Rays are produced without hot sparks, direct arc or heat. Units are available in enclosure sizes from 1000 to 1,000,000 cu-ft. In-duct units can handle air flow from 300 to 3000 cfm. Portable units have self-contained circulator.

Circle No. 137 on Reader Service Card

Baseboard Panel

Product: "Radiantrim" Model 8 baseboard panel.

Manufacturer: American-Standard Plumbing & Heating Div., American Radiator & Standard Sanitary Corp., New York, N.Y.

Features: Constructed of durable





UNITED CORK COMPANIES

Since 1907

7 Central Avenue, Kearny, New Jersey

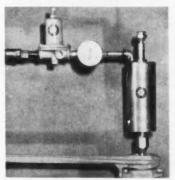
Branch offices or approved distributors in all key cities Circle No. 68 on Reader Service Card cast iron and water-backed, it is a smaller version of Model 10. Can be installed against a wall or recessed to plaster depth. Comes in 12 and 24" sizes and provides higher I-B-R approved steam and hot water ratings. Circle No. 138 on Reader Service Card

Valve Lubricator

Product: Automatic lubricator for plug valves.

Manufacturer: Rockwell Mfg. Co., Pittsburgh, Pa.

Features: Designed to provide plug valves with continuous and regulated supply of lubricant. Applicable for



remote valve installations and can be set to furnish lubricant only when valve requires it. Other features include a built-in refill indicator and remote control limit switch. Consists of three basic parts—piston, cylinder, and lubricant chamber. Working capacity of 1.6 cu.in.

Circle No. 139 on Reader Service Card

Water Cooler

Product: Trapezoid-shape water

Manufacturer: General Electric Co., Chicago Heights, Ill.

Features: The cooler mounts flush to the wall and permits drinking access from front and either side. All plumbing enclosed and hidden from view. Carafe-filler accessory also available for restaurant or cafeteria use,



as is a hot water accessory. Gray cabinet finish with panels are of stainless steel.

Circle No. 140 on Reader Service Card

Motor Protector

Product: Miniature circuit breaker to protect small motors.

Manufacturer: Modern Mfg. Co., Inc., Willow Grove, Pa.

Features: For use primarily in protection of motors in portable power tools and appliances. Attaches to end of cord to protect motor from burning out from either overload or over-



work. Will cut off power when motor is too hot and a reset button is used



SHAKEDOWN



Vibration-proof Construction

Only precision, quality-controlled construction can take this kind of concentrated abuse. These valves, under a pressurized refrigerant, are vibrated at 3600 cycles per minute for prolonged periods. At intervals throughout the accelerated test, Kerotest engineers evaluate performance and condition of seat seals, diaphragm seals, solder seals and handwheels.

The high standards of material quality and craftsmanship maintained at Kerotest assure you of smoother valve operation and minimum maintenance. Tested and proved design features, quality control at each step of manufacture combine to make Kerotest the best valve that money can buy.

ASK FOR KEROTEST VALVES AT YOUR LOCAL WHOLESALERS

KEROTEST MANUFACTURING CO.

2504 Liberty Ave. . Pittsburgh 22, Pa.



KEROTEST 520 DIAPHRAGM PACKLESS GLOBE VALVE

The precision-built brass valve for all types of refrigeration and air conditioning systems. Ideal for liquefied petroleum gas bulk plants, pipe line loading racks, laboratory installations, nitrogen, oxygen (degreased) and compressed air applications

compressed air applications.
Specify the Kerotest 520 globe valve for operating pressures up to 400 psi and temperatures up to 200° F. Use it in vacuum service applications to 1 micron.

KEROTEST QUALITY CONTROLLED FEATURES

- Replaceable spindle seats for continuous positive seating
- Metal to metal backseating
- Beryllium copper and stainless
- steel diaphragms
 Generous handwheel

KEROTEST

to rest the breaker. Available from 3 to 10 amps.

Circle No. 141 on Reader Service Card

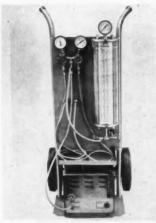
Refrigerant Charging Kit

Product: Portable refrigerant charging station for home and shop use.

Manufacturer: Robinair Mfg. Corp.,

Montpelier, Ohio.

Features: Provides equipment for evacuating, dehydrating, and re-



charging. Includes "Dial-a-Charge" charging cylinder, manifold block, compound and pressure gauges, 6' charging lines, and vacuum pump. Models are 12490 with 40-oz. cylinder and 12560 with 5-lb, cylinder.

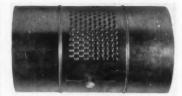
Circle No. 142 on Reader Service Card

Duct Diffuser

Product: "Duct-D-fuser" coupling for duct systems.

Manufacturer: United Sheet Metal Co., Inc., Columbus, Ohio.

Features: For insertion into ductwork without fittings or attachments. Four models available are fixed, rotat-



able, custom pattern, and spiral pipe. Can be inserted at any location for areas with needed temperature control. Engineering tables and data book on product are available.

Circle No. 143 on Reader Service Card

Air-cooled Condensers

Product: Horizontal and vertical air-cooled condensers.

Manufacturer: McQuay, Inc., Minneapolis, Minn.

Features: Available in 13 sizes. Rigid, heavy gage continuous galvan-



ized steel construction. Optional automatic head pressure controls which modulate the condenser capacity, depending on the weather.

Circle No. 144 on Reader Service Card

Rooftop Airconditioners

Product: "Roof Top" line of packaged airconditioning units (Series

Manufacturer: Mammoth Furnace Co., Minneapolis, Minn.

Features: In nine sizes, ranging in Btu output from 150,000 to 1,000,000,



for either oil or gas fuel. May be field-fabricated for water or air cooling condensing units in 3 to 40-ton sizes. Also six sizes of air handling units from 2000 to 16,000 cfm. Combination heating-cooling units in sizes up to 15 tons and 500,000 Btu in a wired and charged unit,

Circle No. 145 on Reader Service Card

Room Thermostat

Product: "D'LUXline" room thermostat.

Manufacturer: White-Rodgers Co., St. Louis, Mo.

Features: Has a level bubble built into wall mounting plate for exact calibration. Cuts installation time. Sealed mercury contacts and operating differentials down to % F for heating and 1 F for cooling. Comfort zone marked in 2 degree increments from 70 to 80 F. Models for heating, cooling, or a combination available. Bi-



metal thermometer can be recalibrated from rear of snap-on plastic cover. Circle No. 146 on Reader Service Card

Aluminum Solder and Flux

Product: "Supco" aluminum solder 100 with flux 200.

Manufacturer: Sealed Unit Parts Co., New York, N.Y.

Features: Helps seal aluminum joints without precleaning or removal of anidization. Has melting point of about 700 F and can be applied similarly to silver solder, phoscopper, or silfos. The flux will penetrate anodized coating, clean aluminum and prevent oxidation and the joint. Both solder and flux come in 50-ft. spools.

Circle No. 147 on Reader Service Card

Silencer Unit

Product: Ventilating system silencer

Manufacturer: Industrial Acoustics

Co., New York, N.Y.
Features: Round "conic-flow" silencer for high pressure ventilating systems. Increases overall noise reduction of unit with lower pressure drop. This is done by use of airflow con-



Here's a new tool which no motor service technician should be without! It's the time-saving, work-saving Sprague M-2 MIKE-O-METER, which speeds and simplifies capacitor testing in the electric motor service field.

This handy little instrument measures only 9" x 6" x 53/4", and weighs a mere 6 lbs.-it goes where you go! A twist of a dial tells you whether capacitors are good or bad, measuring capacitance and power factor of any capacitor from .1 to 2000 MF by the highly accurate Wien Bridge

method. A 'magic-eye'' tube permits easy bridge balancing, and readings are taken directly from calibrated scales.

The M-2 MIKE-O-METER has 2 new built-in safety features-no voltage appears at the test terminals unless the test switch is held. Upon release, any residual charge on the capacitor is automatically discharged.

Built for rugged service, the components inside the sturdy steel case are especially chosen for long, dependable life. Complete with operating manual, the M-2 has a net price of ONLY

See your Sprague Distributor or else order from Sprague Products Company, 53 Marshall St., North Adams, Massachusetts.

FREE! Catalog C-912a contains listings of replacement capacitors for A-C applications, including late-model air conditioners. Write for your copy today!

don't be vague...insist on



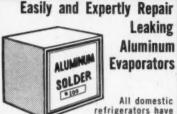
GOOD NEWS FOR SERVICEMEN!



4-WAY CHARGE

with the **EXCLUSIVE** '88' **FORMULA**

NOW YOU CAN DO A RE-PAIR AND PREVENTATIVE MAINTENANCE JOB WHILE ADDING REFRIGERANT



Aluminum **Evaporators**

All domestic refrigerators have aluminum evaporators

Supco Refrigerant-12 will give a clean, dry charge of refrigerant. It will immediately lower running amperage due to friction control. Clean system of all sludges, acids, while charging. Keep expansion valves and capillary operating smoothly.

Supco Refrigerant-12 is available in one pound cans, with a MONEY-BACK **GUARANTEE!**

Supco Aluminum Solder - exclusive solder formula with a melting point of 700° (easy to use as any soft solder) with no danger of melting the evapora-

Special flux penetrates anodized coating without pre-cleaning. Solders copper tubes to aluminum evaporators easily . . . makes retubing a snap!

FREE SAMPLE of Supco Aluminum Solder available at your local jobber!

SEALED UNIT PARTS CO., Inc.

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WHERE THE Keep Everything at Your



See your truck dealer or write us direct for FREE comparison chart that compares leading utility bodies. See why READING leads all others in quality, utility and economy.

READING BODY WORKS, INC., 420 Gregg Ave., Reading, Pa.



Don't waste time and money playing hide-and-seek with your tools and equipment. Everything is easy to find in READING'S "Magic Stowaway" Compartments. Adjustable removable shelf dividers create bins for parts of all sizes. Shelves lift out to make room for large equipment in watertight theftproof compartments.





figuration, with round entrance for minimum entrance loss and solid nose entrance for maximum noise reflec-

Circle No. 148 on Reader Service Card

Frozen Food Case

Product: Frozen food display case (Model 21).

Manufacturer: Hussmann Refrigeration, Inc., St. Louis, Mo.

Features: Has two display decks, vertical display visibility, automatic



defrosting, and "Air-Cascade" refrigeration system. Both glass- and glassless front models.

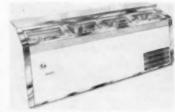
Circle No. 149 on Reader Service Card

Counter-top Merchandiser

Product: Redesigned counter-top merchandising cabinets.

Manufacturer: Savage Ice Cream Cabinet Div., C. V. Hill & Co., Inc., Trenton, N.J.

Features: Two models available, GCT-72 in 6' length and GCT-96, which is 8' long. Has hide-away,



slide-up glass doors, whose frames are of lightweight extruded aluminum. Color band is at product buy level. Also has low door height for child "shoppers.

Circle No. 150 on Reader Service Card

Insulated Tubing

Product: Heat-insulated copper

Manufacturer: Columbia Technical Corp., Woodside, N.Y.

Features: A polyvinylchloride jacket



- to install ...
- service...
- find and fix leaks

 $$43\frac{00}{}$ complete

PREST-O-LITE

Refrigeration and Air Conditioning Outfit

... includes three interchangeable open-flame stems, to give you just the right air-acetylene flame to solder, braze, or heat. Sensitive leak detector stem fits same torch handle, pinpoints tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts air. Better than using soapy water!

using soapy water!
Includes adjustable gas pressure regulator, torch handle and hose. Entire outfit in sturdy carrying case. Try it. See your supplier of LINDE products today. Or write Dept. 626 LINDE COMPANY, Division of Union Carbide Corporation, 270 Park Ave., N.Y. 17, N.Y.



"Prest-O-Lite" and "Linde" are registered trade marks of Union Carbide Corporation. Circle No. 40 on Reader Service Card is factory-extruded over the tubing with an inner profile of star-shaped serrations. The tips of these serra-



tions rest on the tubing, leaving longitudinal air channels which act as insulation.

Circle No. 151 on Reader Service Card

Air Handling Unit

Product: Compact horizontal or vertical air handling unit.

Manufacturer: Thermal Engineering Corp., Houston, Tex.

Features: Designed to fit where space is at a premium. Five sizes



available—nominal 800, 1000, 1500, 2000, and 3000 cfm. Cooling coils may be chilled by water or direct expansion. Heating coils may be hot water or steam.

Circle No. 152 on Reader Service Card

Temperature Controller

Product: Temperature controller which combines thermostat and humidistat.

Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Compensates for humidity rise by lowering dry bulb temperature. Humidistat registers humidity



rise and closes circuit to thermostat. An auxiliary heater adds artificial heat, thermostat compressor starts, and its control point will drop because of humidistat.

Circle No. 153 on Reader Service Card



Install Insulation with TUFF-BOND

Super-Strength Adhesives

TUFF-BOND #6

... non-flammable fire-retardant adhesive for installing insulation

TUFF-BOND #7

... fire-retardant adhesive for installing insulation

TUFF-BOND M-102-H

... duct liner adhesive

TUFF-BOND 21-C

... clear lap sealer and lap adhesive

TUFF-BOND 21-W

... white lap sealer and lap adhesive

TUFF-BOND #500

... exceptionally high-strength chemical-set adhesive. Wide thermal range -100° F. to 350° F.

TUFF-BOND #1000

... high heat resistance for bedding and installing high temperature insulation

TUFF-BOND #12

... high pressure duct sealer TUFF-BOND OUIK SET

... neoprene-base, fast-setting adhesive. Recommended for installing metal and nylon hangers to smooth surfaces.

TUFF-BOND GENERAL PURPOSE IMPROVED

... all-around adhesive for installing insulation, insulation hangers, etc.

Ask for literature and prices.

GOODLOE E. MOORE

DANVILLE 25, ILLINOIS

Circle No. 47 on Reader Service Card



CONNECT CO. GAS INLET
FROM TANK

CONNECT SODA WATER
OUTLET TO FAUCET

CONNECT TO WATER SUPPLY

Why pass up steady big-time carbonator business? Easy as 1-2-3 to install—the Bantam-100 takes no time at all! Just 3 simple connections, hook up the power, and the mighty little Bantam-100 is off and running—way out front in performance! It's fully automatic and worry free! Let the Bantam join your sales force and watch the feathers fly!

TEMPRITE CARBO-COOLER COOLS and CARBONATES from THE SAME UNIT! Delivers up to 300 glasses hourly! Compact replacement unit for cold drink vending machines, or wherever carbonated water is served. Famous Temprite instantaneous cooling principle and trouble-free service. Measures only 7½° 0.D. x 15° height.



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TEMPR	RITE PRODUCT	S CORPORATION
	RIPMINGHAM	MICHIGAN

Rush me details o	n Bantam-100 and Carbo-Cooler.
Name	
Company	
Address	
City	State

Circle No. 78 on Reader Service Card

LETTERS

Continued from page 16

goes into the motor must be dissipated in the condenser.

Much difficulty was experienced in this part of the country in ordinary airconditioning installations when these type compressors were adapted several years ago. Cooling towers, which had been completely adequate when used with opentype machines, became undersized when used on the hermetic and semi-hermetic airconditioning units.

I wonder if it wasn't a combination of two things that caused the problem described in Mr. Smith's article: first, this type of compressor; and secondly, the fact that the tower had not been considered for refrigeration use.

> S. A. DURBIN Texas Distributors, Inc. Dallas, Texas

We like readers who keep our experts on their toes. When we passed Mr. Durbin's comment on to Hugo C. Smith, who wrote the Applications Manual article in question, he did some more research and came up with the following information:

It is true that the heat rejection factor of 1.25 is not completely correct for the extremely high ambients that you would encounter in Texas when using cooling towers. By referring to some rather hard-to-find tables, we note that the heat rejection factors between temperatures of 105 F and 140 F vary from 1.20 to 1.30. Thus the average figure used of 1.25 would represent approximately 120 F condensing.

I think that part of your difficulty with hermetic compressors stems from the fact that they are still having trouble dissipating their heat properly. We experience the same difficulty in Cleveland when we run into high ambients, such as air-cooled units in confined spaces or restaurant kitchens.

NEW REPRESENTATIVES

Vikimatic, Inc., Cleveland, Ohio, and Snook & Aderton, Inc., Lubbock, Tex., are new sales representatives of Recold Corp.



... How TMC

MOLECULAR SIEVE

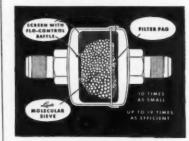
FILTER-DRIERS

Increase Sales and Profits

for YOU... From original equipment to replacement, you save space, inventory, installation costs and call-backs when you use TMC Filter-Driers.

- 1. Five sizes cover entire range up to 15 tons.
- 2. Largest size fits palm of your hand.
- Save space in refrigeration and air conditioning system design.
- Simplified line simplifies ordering, stocking and handling.
- Bulletin 1157 covers Moisture Removal, Filtration, Acid Removal and Low Pressure Drop.

Write for TMC Facts and Prices



TUBE MANIFOLD CORPORATION

445 Bryant Street . N. Tonawanda, N.Y.

Another Product of the World's Leading Manufacturer of Liquid Receivers

Circle No. 64 on Reader Service Card SEPTEMBER 1960/THE REFRIGERATION & AIRCOMDITIONING BUSINESS T:

an air-conditioning dealer who's tired of price cutting

Good salesmen agree: You combat price cutting by selling quality.

You sell quality by specifying unitary* air-conditioning equipment with the ARI Seal. Such equipment meets industry-approved performance standards, is subject to testing by an independent laboratory. All capacity ratings are based on a uniform set of standard conditions—expressed in Btu per hour. Any model failing to deliver rated capacity or to meet performance requirements must be brought up to standard or the Seal of Certification is withdrawn. When you specify units bearing the ARI Seal, you are assured rated performance.

Sell this assurance to your customers. Sell equipment certified to deliver rated capacity.

Fifty-one equipment manufacturers (producing more than 90% of the unitary air-conditioning equipment sold today) make the ARI Certification program possible.

Their support—and the ARI Seal—help you sell without price cutting.

* "Unitary" air-conditioners included in this program: all packaged air-conditioners, whether single units or two-piece units (called "split" systems), designed to be used together, up to 135,000 Btu per hour (Btuh) in capacity, but not including room air-conditioners. ARI Standard 210-58 for electrically-driven equipment; ARI Standard 250-58 for heat-powered equipment.



For free explanatory booklet and Directory of participating manufacturers, write to: Chief Engineer, Dept. J-904, Air-Conditioning and Refrigeration Institute, 1346 Connecticut Avenue, N.W., Washington, D. C.

Circle No. 1 on Reader Service Card



a truly universal piercing valve it pierces and seals these common refrigerant cylinders:

plain top 1 lb. cans threaded top 1 lb. cans threaded female top 2 lb. cylinders threaded male top

2 lb. cylinders

available now in attractive skin-package at all quality jobbers!



Superior

pittsburgh 26, pa.

Circle No. 63 on Reader Service Card

SERVICE DISPATCHING

Continued from page 39

serviceman on the foreman's routine visit to the job.

▶ Do not allow men to come into the shop without permission, especially in the slow season. This can cost you money, since you are paying the gas bill.

► Keep accurate mileage and gasoline records on each truck.

▶ Do not allow a man to take a truck home until he has worked for you at least six months, or until you have investigated his accident record thoroughly.

Arrange for a post office box and supply your men with special envelopes so that they can mail in completed work orders at the end of each day. Then you'll have them for processing the next day.

▶ Make sure the men understand their responsibility in regard to their trucks, and that they know the penalties for abusing the privilege. Do not fail to punish offenders to set an example for the other men.

SERVICE LEADS TO SALES

Continued from page 41

Schwartz story. One shows a customer's loyalty to service, the other demonstrates confidence in the equipment Schwartz sells.

When one account moved 70 miles away he retained Schwartz for all service. Ninety service calls were made before the client moved. Now the account pays \$14 car expense plus all labor and material to have a serviceman check out his equipment. And, if the man has to stay overnight, the customer pays for that too. This account is carefully maintaining an investment of \$46,000 worth of equipment.

The second story concerns a customer Schwartz obtained through servicing water cooled equipment. Since then, he has installed fifteen 5-ton, nine 7½-ton, and four 3-ton air cooled units. Plans for this year call for 40 to 50 tons of equipment.



with New, Improved Features.

- A new RUST INHIBITOR . . . which VAPOR-IZES and reaches into the smallest crevices.
- CONTROLLED FOAM ACTION . . . provides full seasonal protection without foam at start up time.

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Circle No. 27 on Reader Service Card SEPTEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

WHOLESALER NEWS

Continued from page 60

Meier has said Thom Muir, executive director, and Charles Koopman, ARW past president, will be present. Koopman will present the region's charter at this meeting.

Jess Rauch, chairman of Region 9, has announced that his area will hold its annual meeting Oct. 8-9 at Alisal Ranch and Resort, Solvang, Calif. A golf tournament, horseback riding, and an on-the-range breakfast will be held in addition to business meetings.

Region 1 will hold its fall meeting at Jug End Barn Inn, Great Barrington, Mass., Sept. 21-22. Thom Muir, executive director, will talk on "The New Look in ARW." He also will present plans of the national group and possible future plans for regional members.

Tersco, Inc., Moves Into New Building

Tersco, Inc., refrigeration and airconditioning equipment and supplies wholesaler, has moved to its new Fort Worth, Texas, headquarters, where over 19,000 sq. ft. are available. The 25-yearold firm also has operations in Waco, Lubbock, and Odessa, Texas.

In the new building, the sales and display area was reduced, with increased space added to the warehouse and parking facilities. The structure, constructed of concrete tile and fronted with brick, has a covered 10 x 60' loading dock.

Inside, merchandising islands built on casters can be rolled out into the warehouse to make a meeting room of the entire sales area.

The plant is easily accessible to to all parts of Fort Worth, being located near the intersection of two thoroughfares which

bisect the city.

Tersco officers are Paul D. Cato, president and general manager; Jesse K. Mattox, Jr., vice president; Calvin D. Loughridge, vice president; Pauline E. Cato, secretary, and Paul D. Cato, Jr., treasurer.



INTERIOR VIEW of new Tersco building's sales and display area in Fort Worth



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with new LA-CO Aluminum

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Write on company letterhead for sample: state details pertaining to your specific soldering problem.



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product.

CHEMICAL SOLVENT CO.
BIRMINGHAM, ALABAMA



Circle No. 20 on Reader Service Card

AS WE SEE IT

Continued from page 26

Co., our franchised wholesaler in that city, two 5-ton airconditioners are being installed in the upper tiers of the prison, where the women are housed, to cut down the intense heat which often reaches 110 F in these areas.

Let's hope the installing mechanics keep a close check on their hacksaws and tube cutters!

► A special type of refrigerator for those people who will be "dining out" in space — that's the \$50,000 project assigned to a group of General Electric scientists.

Under a contract from the Air Force's Wright Air Development Division, GE's missile and space vehicle department is studying how food reserves on space ships can be preserved on long trips.

About 9 pounds of supplies are needed for the daily nutritional requirements of one man, according to the scientists. The problem is how best to store these supplies during space travel

Here are some of the problems these scientists face in producing a working model of a proposed space refrigerator: near-zero temperatures of space, possible effects of cosmic and other radiation, extreme heat during entry to the atmosphere of the earth or other planets, available power supply, type of water system used, and effects of zero gravity.

PAYNE RELEASES MOVIE FOR LOCAL SHOWINGS

An 18-minute, 16 mm. colorsound movie has been released by Payne Co. Entitled "Be Our Guest," this movie features a visual plant tour of the company's facilities in La Puente, Calif., plus many Southern California scenes.

The complete story of manufacturing heating and airconditioning equipment is shown.

Circle No. 3 on Reader Service Card

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Circle No. 49 on Reader Service Card SEPTEMBER 2960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Dealer-Distributor APPOINTMENTS

Two new sales representatives have been named by the heating and cooling coil department of the Danville Div., Bohn Aluminum & Brass Corp. Handling the company's line of heating and cooling coils in the New England States is Foulds Associates, Revere, Mass. V. N. Harwood Co., Buffalo, N.Y. will serve western New York State.

John H. Roehm has been appointed sales representative for Wolverine Tube, Div. of Calumet & Hecla, Inc. His area includes southeastern Ohio and West Virginia.

F. R. Young Co., has been named sales representative for Modine Mfg. Co. The firm is located in Houston, Tex., and will represent all equipment produced by the Modine heating, ventilating and airconditioning division in that area.

Sam M. Kern Associates, New York City, has been named northeastern representative for Nor-Lake, Inc. Kern will distribute Nor-Lake products in New York state, including New York City, metropolitan New Jersey and all of the New England states.

Three new representatives have been appointed by Elgen Mfg. Co. They are: L. E. Schulein, Chicago, Ill.; W. B. Forrest Co., Detroit, Mich.; Vincent E. Devine, Morton, Pa.

Furnace Distributors, Inc., has been appointed distributors for the Philadelphia, Pa., area by Typhoon Air Conditioning Div., Hupp Corp. Furnace will handle the full line of Typhoon products.

Halsey Supply Co., Brooklyn, N.Y. has been appointed a franchised representative for the Welbilt line of residential and commercial airconditioners and components, it was announced by Welbilt Air Conditioning & Heating Corp.

David Fried, New Orleans, La., and L. V. Appleby Co., Albany, N.Y. have been appointed sales representatives for Barneby-Cheney activated charcoal air purification equipment.

Allied Refrigeration Co., Philadelphia, Pa., has been named factory authorized service dept. for in warranty repairs on the Emerson Electric window airconditioners and humidifiers.

Two new sales agents have been named by CRS Industries, Inc. to handle the company's line of "Stratronic" electronic filtering systems. James W. Mcguire, New York City, will serve central New York state, Connecticut, Rhode Island and the metropolitan New York area. Serving the metropolitan Philadelphia area will be James R. McQuaide, Philadelphia, Pa. He will also cover eastern Pennsylvania, southern New Jersey, and all of Delaware.

Remington Corp. has announced the appointment of Brownell Associates, Inc., as

New York Metropolitan representatives for the company's incremental system of airconditioning.

Elgen Mfg. Co. has added Ray Meroney Manufacturer's Agency, Atlanta, Ga., to its list of representatives. The Ray Meroney Co. will handle the full line of Elgen products.

Frank Stoffel Equipment Co., Columbus, Ohio, has been appointed Columbus sales representative for Ilg Electric Ventilating Co.

American Potash & Chemical Corp. has appointed Mareco, Inc., Adrian, Mich., as representative for refrigerant chemicals in a territory which includes Michigan, Ohio, Kentucky, West Virginia and western Pennsylvania.

York Corp. Sub. of Borg-Warner Corp., has named Reliable Steel Supply Co., Los Angeles, Calif., as a district sales agent for airconditioning equipment.

Tenn York Supply Corp., Nashville, Tenn., has been appointed distributor for heating, airconditioning, and water heaters for Rheem Mfg. Co.'s home products division.

EVERYTHING IS ON THE ROOF



NOT ONE SQUARE FOOT of floor space is needed for these roof mounted heat pumps. Installed at the Sunnyslope Shopping Center, Salem, Ore., 20 such heat pumps provide comfort for 50,000 sq.ft. of retail store area. The installation also includes supplementary electric resistance heating packages. A total of 90 hp of Mueller Climatrol equipment is used on the job.

DRIERS DRIERS DRIERS

Refrigeration Research offers a high quality line of driers for every need.....in a complete size range. All Refrigeration Research driers contain proven filtering media and are generously sized.

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Your choice - Silica Gel or Molecular Sieve desiccant. Bull Dog Filter-Driers feature progressive filtering..... retain a maximum amount of moisture, dirt and foreign matter without showing increased pressure drop. Low in cos and high in quality.....specify the Bull Dog line.....in the drying agent of your choice.

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TEXAS SCHOOL UNIOUE IN ITS COOLING SYSTEM

The state of Texas has something else to brag about with the new airconditioning system recently installed in the Irving, Tex., high school.

The school has a special piping layout which permits airconditioning to be switched to any one of seven different areas, including the 78 classrooms. Generally, zoned cooling for schools does not include classrooms.

The cooling is provided by three Carrier water chilling machines and three reciprocating-type units.

As desired, chilled water may be piped to airconditioning apparatus in any of the areas. Provision has been made for the later addition to cooling capacity for future refrigeration by installing air handling units in all zones.

ELMER CARLSON IS TOP COLEMAN TRAINING GRAD

Elmer Carlson of Bridgman, Mich., was the highest scorer in the national examination recently completed by Coleman Training Institute. He is a sales representative of Coleman Co. in Chicago.

At the Institute's graduation, 20 heating and airconditioning dealers and distributors received proficiency awards under the competitive grading program inaugurated at the school this year.

Nearly 200 dealer and distributor representatives were enrolled in the series of heating. airconditioning, and merchandising schools.

NAMES REPRESENTATIVE

Donovan Associates, West Hartford, Conn., engineering and sales organization, has named Andrew W. Knight as a New England district representative for the firm.

Knight will cover eastern Massachusetts, Rhode Island, New Hampshire, and Maine, working out of Revere, Mass.



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MADDEN BRASS PRODUCTS COMPANY AURORA 2, ILLINOIS, U.S.A. EXPORT: AD AURIEMA, INC. 85 BROAD ST., New York, N. Y.

DISCS CONTROL TRAVEL

Continued from page 51

truck. Yet, there's been no increase in gas mileage despite the

larger engine.

"The day recorders were installed, it added to my feeling of security," says Stewart. "Now I know that if I see one of my trucks driving around the city at night, I'll be able to check the next day and see if it was out on a service call."

How does Stewart know his men have accepted the new setup? "We've received no opposition to the recorders," he said. "A few years ago we tried putting telephones in each truck. The men constantly had to have these phone units repaired. So far there have been no repair bills on the recorders."

Information from the discs shows the amount of time put in on a job and the amount of time needed to get to the next assignment. Servicemen have proof that if he would have gone any faster, he would have been breaking speed limits.

Data from the disc has been used in test cases to thwart arrests by radar-equipped policemen. Stewart hasn't run into this problem yet, but lists this as another advantage.

One further use of the data is to confirm billing charges to customers. Discs show exactly how long trucks are parked outside the customer's business.

Speed recorders are manufactured by Service Recorder Co., Cleveland, Ohio.

DAY & NIGHT FINISHES FACTORY SCHOOL STUDY

Nineteen students from six states have become the first graduates of the one-week factory school operated by Day & Night Mfg. Co.

The course included sessions on product design, service, and installation techniques of airconditioning systems. Also covered were application engineering and sales techniques.

Of the 19 students, three were Day & Night dealers; 12 were distributor personnel, and four were new salesmen.





Quiet Operation

Circle No. 16 on Reader Service Card



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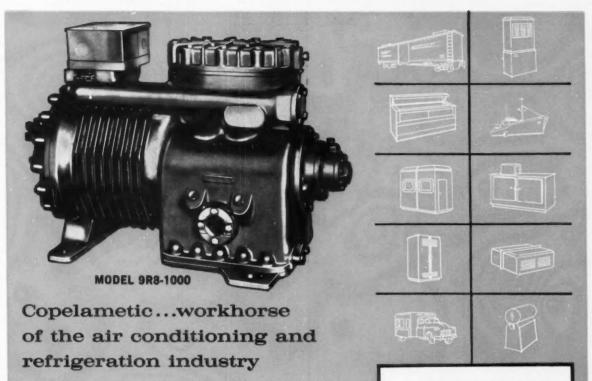
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